

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

TQ DELTA, LLC., (CAUSE NO. 2:21-CV-310-JRG
)
Plaintiff, ()
vs. ()
COMMSCOPE HOLDING COMPANY, ()
INC., et al., () MARSHALL, TEXAS
(MARCH 21, 2023
Defendants.) 8:30 A.M.

VOLUME 3

TRIAL ON THE MERITS

BEFORE THE HONORABLE RODNEY GILSTRAP
UNITED STATES CHIEF DISTRICT JUDGE

SHAWN McROBERTS, RMR, CRR
100 E. HOUSTON STREET
MARSHALL, TEXAS 75670
(903) 923-8546
shawn_mcroberts@txed.uscourts.gov

A P P E A R A N C E S

FOR THE PLAINTIFF: DAVIS FIRM, P.C.
213 N. FREDONIA ST., SUITE 230
LONGVIEW, TEXAS 75601
(903) 230-9090
BY: MR. RUDOLPH FINK
MR. CHRISTIAN HURT
MR. WILLIAM DAVIS
MR. TY WILSON

McANDREWS HELD & MALLOY, LTD
500 W. MADISON ST., 34TH FLOOR
CHICAGO, ILLINOIS 60661
(312) 775-8000
BY: MR. PETER McANDREWS
MS. ASHLEY RATYCZ
MR. RAJENDRA CHIPLUNKAR

FOR THE DEFENDANT: ALSTON & BIRD, LLP-NC
101 SOUTH TRYON STREET
SUITE 4000
CHARLOTTE, NC 28280
(704) 444-1025
BY: MR. ROSS BARTON
MR. MATTHEW STEVENS
MR. KIRK BRADLEY
MS. KARLEE WROBLEWSKI

ALSTON & BIRD, LLP - ATLANTA
ONE ATLANTIC CENTER
1201 WEST PEACHTREE STREET NW
#4900
ATLANTA, GEORGIA 30309-3424
(404) 881-7000
BY: MR. MICHAEL DEANE

THE DACUS FIRM, PC
821 ESE LOOP 323, SUITE 430
TYLER, TEXAS 75701
(903) 705-1117
BY: MR. DERON DACUS

OFFICIAL REPORTER: SHAWN M. McROBERTS, RMR, CRR
100 E. HOUSTON STREET
MARSHALL, TEXAS 75670
(903) 923-8546

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1 THE COURT: Be seated, please.

2 Are the parties prepared to read into the record those
3 items from the list of pre-admitted exhibits used during
4 yesterday's portion of the trial?

5 MR. WILSON: Yes, Your Honor.

6 THE COURT: Please proceed.

7 MR. WILSON: Your Honor, Ty Wilson on behalf of
8 Plaintiff TQ Delta.

9 And on Monday March 20th, 2023, at trial, TQ Delta
10 admitted the following exhibits: Exhibit 13, Exhibit 14,
11 Exhibit 15, Exhibit 16, Exhibit 17, Exhibit 18, Exhibit 19,
12 Exhibit 20, Exhibit 21, Exhibit 22, Exhibit 23, Exhibit 24,
13 Exhibit 28, Exhibit 29, Exhibit 30-B, Exhibit 31, Exhibit 39,
14 Exhibit 67, Exhibit 70, Exhibit 71, Exhibit 72, Exhibit 107,
15 Exhibit 108, Exhibit 110, Exhibit 117, Exhibit 124-A and -B,
16 Exhibit 135-A, -C, and -D.

17 THE COURT: All right. Any objections to that
18 rendition from Defendants?

19 MS. BEATON: No, Your Honor.

20 THE COURT: Do Defendants have a similar rendition
21 to offer into the record?

22 MS. BEATON: Yes, Your Honor.

23 THE COURT: Please proceed.

24 MS. BEATON: Erin Beaton on behalf of CommScope.

25 The Defendants' exhibits on Monday, March 20, 2023, were:

1 Exhibit 36-A, Exhibit 36-B, Exhibit 37, Exhibit 38-A, Exhibit
2 38-E, Exhibit 38-D, Exhibit 65-A, Exhibit 65-B, Exhibit 78,
3 Exhibit 79, and Exhibit 86.

4 THE COURT: All right. Any objection from Plaintiff
5 as to Defendants' rendition?

6 MR. WILSON: No objections from Plaintiff, Your
7 Honor.

8 THE COURT: All right. Thank you, counsel.

9 Doctor Cooklev, you are still on the witness stand
10 testifying. If you'll return to the witness stand, please,
11 sir, and I remind you you remain under oath.

12 Mr. Hurt, you may go to the podium and prepare to
13 continue your direct.

14 And as they're doing that, let's bring in the jury,
15 please.

16 (Whereupon, the jury entered the courtroom.)

17 THE COURT: Good morning, ladies and gentlemen.
18 Welcome back. It's good to see you. Please have a seat.

19 We will continue with the direct examination by the
20 Plaintiff of Doctor Todor Cooklev where we left off yesterday.

21 Mr. Hurt, you may continue with your direct examination
22 when you're ready.

23 MR. HURT: Thank you, Your Honor.

24 And, Mr. Diaz, can we pull up slide 102, please?

25 And, Your Honor, may I approach the witness with the

1 clicker for the demonstratives?

2 THE COURT: You may.

3 TODOR COOKLEV, Ph.D., PREVIOUSLY SWORN,
4 having been duly sworn, testified further under oath as
5 follows:

6 DIRECT EXAMINATION continued

7 BY MR. HURT:

8 Q. And do you recall before we broke yesterday evening,
9 Doctor Cooklev, we were talking a little bit about the
10 benefits of the inventions that are reflected in this patent,
11 the '411 Patent?

12 A. I do.

13 Q. And can you give the jury a brief overview of the '411
14 Patent, please?

15 A. The '411 Patent is entitled Packet Retransmission, and
16 the subject is memory sharing when we have retransmission.

17 Q. And which claim of the '411 Patent are you going to
18 present today?

19 A. I will be discussing claim 18 of the '411 Patent.

20 Q. And are you going to present your analysis for this
21 patent in the same way that you did yesterday for the '048
22 Patent?

23 A. Yes, I will.

24 Q. Okay. And in your opinion, do the CommScope accused
25 products infringe claim 18 of the '411 Patent?

1 A. All of the accused products infringe claim 18 of the '411
2 Patent.

3 Q. And are you going to be putting a green checkmark next to
4 each of these claim elements then?

5 A. Yes.

6 Q. What is the first claim element that you analyzed in
7 claim 18?

8 A. The first claim element is, "A transceiver capable of
9 packet retransmission comprising."

10 Q. And in your opinion, do the CommScope accused products
11 include that limitation?

12 A. Yes, all of the accused products include this limitation.

13 Q. Can you explain to the jury, please, how you arrived at
14 that conclusion based on the evidence?

15 A. This limitation includes a term that was defined by the
16 Court, and I applied the Court's definition in my analysis.
17 And all of the accused products include this limitation.

18 Also, the G.INP standard, which is the other standard
19 that is relevant to this patent, it clearly says that it
20 describes itself as a standard for physical retransmission.

21 Q. And that G.INP standard, is that Exhibit 25-A in this
22 case?

23 A. Yes, that is Exhibit 25-A.

24 Q. And in your opinion, Doctor Cooklev, are the accused
25 products transceivers under the Court's construction as it

1 applies to claim 18 for the same reasons you were talking
2 about yesterday for claim 5 of the '048 Patent?

3 A. Yes, they are.

4 Q. And so did you put the green checkmark for this element?

5 A. Yes, I put the green checkmark.

6 Q. What is the next claim element in claim 18 that you
7 analyzed?

8 A. The next claim element is a "receiver portion capable of
9 receiving a plurality of packets, identifying at least one
10 packet of the plurality of packets as a packet that should be
11 retransmitted."

12 Q. And in your opinion, do the CommScope accused products
13 meet that limitation?

14 A. Yes, they do. All of the accused products meet this
15 limitation.

16 Q. And can you go back one slide, Doctor Cooklev?

17 MR. HURT: Your Honor, we're about to get into some
18 source code. I request that the Court be sealed at this time.

19 THE COURT: All right. Based on counsel's request
20 and to protect confidential and proprietary information, the
21 Court will order the courtroom sealed.

22 I'll direct that all persons present who are not subject
23 to the protective order entered in this case excuse themselves
24 and remain outside the courtroom until it's reopened and
25 unsealed.

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(Courtroom unsealed.)

THE COURT: All right. The courtroom is unsealed.

You may continue, Mr. Hurt.

Q. (BY MR. HURT) Can you describe for the jury, Doctor Cooklev, some of the loop diagnostic mode testing that you did for Doctor Brody?

A. Yes, I can.

So regarding the loop diagnostic mode, I did similar type of testing with the same test equipment, and I observed that the modems do implement loop diagnostic mode and they exchange messages that are described in the loop diagnostic mode procedures.

1 So this is a screenshot of the graphical user interface.
2 So this screenshot is produced by the instrumentation
3 equipment that I use. And the screenshot identifies the
4 R-PRM-LD message. That message is part of the loop diagnostic
5 mode, and I think the screenshots also says that this is loop
6 diagnostic mode.

7 Also, the actual signals on the line as captured by the
8 instrumentation equipment, they are also shown on this
9 screenshot. And the spectrum of the signal shows that this
10 signal is -- for example, is obtained using multicarrier
11 modulation.

12 Q. And did your testing show to you, Doctor Cooklev, that
13 the accused products implement loop diagnostic mode as per the
14 VDSL2 standard?

15 A. Yes.

16 Q. Can you describe for the jury some of the tests that we
17 saw yesterday for Doctor Brody relating to the robust overhead
18 channel?

19 A. So this is the -- also part of the test that I did
20 regarding the robust overhead channel. So in this test,
21 because I captured all the messages and all the signals
22 actually exchanged by the modem and the central office
23 equipment that was used, so the -- on this -- I prepared
24 this -- this information based on my tests.

25 The green line shows the signal-to-noise ratio for each

1 carrier, and the red or dark red line at the bottom shows the
2 number of bits allocated to each carrier. And based on these
3 results, we see that there are two sets of carriers. This is
4 the first set highlighted in blue here. There will be one --
5 as Doctor Brody explained, one SNR margin. And now we see
6 another set of carriers, and for this set there is a different
7 SNR margin.

8 Q. And did these tests show to you that the accused products
9 implement different SNR margins like Doctor Brody was talking
10 about yesterday?

11 A. Yes.

12 Q. What analysis did you do for Doctor Madisetti?

13 A. So for Doctor Madisetti, I did, first, phase scrambling
14 testing. So I did a thorough testing of phase scrambling to
15 determine whether or not the accused products implement phase
16 scrambling as phase scrambling is described in the VDSL2
17 standard.

18 And so I -- based on capturing the -- completely
19 capturing the signal that was produced by the modem, I was
20 able to -- so I put the results in an Excel spreadsheet, and I
21 was able to calculate the phase before phase scrambling and
22 the phase after phase scrambling. And my results confirm that
23 all of the accused products implement phase scrambling as
24 described by the VDSL2 standard.

25 Q. And can you describe for the jury the simulations that

1 you ran for Doctor Madisetti as it related to that reduction
2 in PAR issue you were looking into?

3 A. So I was asked to perform a software simulation to
4 determine the benefit of phase scrambling. So the benefit is
5 proportional to the reduction in a parameter called
6 peak-to-average power ratio. And this is the result of my
7 software simulation. The results on the top here are the
8 peak-to-average power ratio without phase scrambling.

9 So we see that without phase scrambling, the
10 peak-to-power average ratio is high, which is disadvantageous
11 in practice. And when phase scrambling is used as described
12 in the standard, then we see that significant reduction in the
13 peak-to-average power ratio. So that's the result of my
14 simulation.

15 Q. So is the top part here, is that showing that peak power
16 without the phase reduction? I'm sorry. Without phase
17 scrambling?

18 A. Yeah. That is the peak-to-average power ratio without
19 phase scrambling, yes.

20 Q. And then if you use phase scrambling, this blue then, I
21 assume, would represent that reduction. Right?

22 A. The blue line is the peak-to-average power ratio with
23 phase scrambling. The reduction is just -- is the difference
24 between the two.

25 Q. Okay. What testing did you do for Doctor Madisetti on I

1 think what was referred to as the DSL reboot patent earlier?

2 A. And regarding this -- the online reconfiguration about
3 which I think Doctor Madisetti will be testifying, I was asked
4 to perform a test to determine whether or not online
5 reconfiguration as described in the standard is supported.
6 And I concluded that it is. This is a screenshot of my test
7 result showing that the interleaver reconfiguration is
8 supported.

9 Q. And do you remember yesterday we heard some
10 testimony -- deposition testimony from Mr. Baker that AT&T was
11 requesting G.vector in the product? Do you remember that?

12 A. Yes, I do.

13 Q. And when a product is configured or configurable for
14 G.vector, is this part of the VDSL2 standard for online
15 reconfiguration a mandatory feature?

16 A. Yes, it is.

17 Q. Is this all of the testing and simulations that you are
18 going to provide today?

19 A. I believe, yes.

20 Q. What's the next and, I think, final section of your
21 presentation today?

22 A. I was asked to analyze and provide some opinions related
23 to damages.

24 Q. And what is -- in your opinion, Doctor Cooklev, does
25 CommScope induce infringement by its customers such as AT&T?

1 A. Yes, CommScope induces infringement by its customers.

2 Q. And can you explain to us how the evidence
3 shows -- supports your opinion?

4 A. So I reach this conclusion because CommScope designs its
5 products for a life span of five to seven years. I think
6 yesterday in the deposition testimonies from CommScope's
7 witnesses, we saw that. So a product that was sold five to
8 seven years ago would be still in use. Right? Five to seven
9 years later.

10 During this time CommScope provides frequent software and
11 firmware updates. I think, according to the deposition of
12 CommScope witnesses, CommScope provides updates, I mean,
13 sometimes every two to three months and maybe sometimes every
14 four months. And when CommScope provides these firmware and
15 software updates, CommScope induces infringement.

16 Also, CommScope provides services, repairs, and support.
17 CommScope frequently meets with its customers. Well, AT&T is
18 an important customer for them. And CommScope also provides
19 customer training.

20 Q. So is it the case that if a product was sold to AT&T,
21 say, in 2013, it would still be in use five to seven years
22 later, in your view?

23 A. Well, yes, exactly. Based on the testimony of
24 CommScope's witnesses, a product sold in 2013 would be used
25 by -- until about 2020, and maybe even a little bit after

1 that.

2 Q. And if there were software updates to that product, you
3 know, two years later, three years later, four years later, is
4 it your opinion that those software updates would induce the
5 ongoing use of that same product?

6 A. Yes.

7 Q. What is the next --

8 A. Yeah, these are the --

9 Q. What is the next issue relating to damages you are here
10 to talk about today?

11 A. I was asked to analyze the -- what is the smallest
12 saleable patent practicing unit. And in my analysis, I
13 examined the hardware schematic of a representative of the
14 accused products. So this schematic is blown up a little bit
15 on -- on this slide.

16 The conclusion that I reached is that the Broadcom chip
17 is not a patent-practicing entity. The chip alone does not
18 practice the asserted claims. Well, to begin with, the chip
19 needs to be powered, so some power supply circuitry will be
20 required. But that alone is not enough for the chip to
21 practice the asserted claims. What is needed is some line
22 drivers are needed, some interface circuitry going to the
23 phone jack.

24 On the -- in addition, an analog front end is required,
25 but that is still some -- there are other components external

1 to the chip that are necessary for this chip to function. So
2 I concluded that it is the entire product that -- and that is
3 the smallest saleable patent-practicing unit.

4 Q. What is it next damages issue you are going to be
5 addressing today?

6 A. I was asked to respond to CommScope's analysis of
7 non-infringing alternatives, and -- well, CommScope made some
8 very general arguments about non-infringing alternatives.
9 These very general arguments, they made it virtually
10 impossible to analyze in any -- with any specifics any
11 non-infringing alternatives.

12 In reality, CommScope did not identify any viable
13 non-infringing alternatives to the asserted patents.

14 Q. And in your analysis, are you aware of any way that
15 CommScope could provide the functionality that's accused in
16 this case of providing DSL without infringing these patents?

17 A. No. I am not aware of any non-infringing alternatives.

18 Q. What's the next issue you're going to address today?

19 A. I was asked to determine -- to come up with a list of how
20 many patents are likely essential for DSL, and the way I did
21 that is I worked very closely with TQ Delta's damages expert,
22 Doctor Putnam. And initially just based on some -- based on
23 this search of key words such as DSL or digital subscriber
24 line, Doctor Putnam came up with almost 15,000 patents
25 that -- in which these -- these key words appear.

1 Well, that's a very large list for someone to analyze, so
2 Doctor Putnam recommended the use of a patent database called
3 Derwent Innovations Index. And the reason this database is
4 convenient is because it classifies patents using different --
5 different key words, using different terms. So it's
6 convenient for classification of patents.

7 And I examined -- I examined this database and identified
8 the categories in which patents that are likely DSL standard
9 essential would be. I also examined the key words that this
10 patent database uses and came up with a list of key words such
11 that if a patent uses one of these key words, then I
12 considered it less likely to be standard essential.

13 And so there were many patents that used these key words
14 that, in this way, I didn't have to analyze. So the patents
15 that did not include these key words were 1,100 patents that
16 Doctor Putnam compiled, and I received that list.

17 And then I analyzed this list of more than a thousand
18 patents to determine which patents are likely essential for
19 DSL. I analyzed this in two rounds. In the first round,
20 relatively quickly I was able to eliminate from further
21 consideration about 900 patents of these 1100. And then the
22 200 patents that looked like there's a chance they could be
23 essential, I analyzed more carefully, and then I came up with
24 33 patents that are likely standard essential. I provided
25 this list to Doctor Putnam.

1 Q. And then can you describe for the jury the last analysis
2 you're presenting about memory savings for the '048 and '411
3 Patents?

4 A. So the -- these results, I was asked to analyze the
5 benefits of the '048 Patent and the '411 Patent. I testified
6 yesterday that these patents lead to a reduction in the memory
7 needed and, therefore, a reduction in the memory that is
8 needed.

9 So I analyzed what would be the increase in chip area if
10 these patents are not practiced, and I concluded that there
11 would be between 7.69 percent to 10 percent increase in chip
12 area without the benefit of the '048 Patent, and there would
13 be between 15.38 percent to 20 percent in chip area without
14 memory sharing as specified in the '411 Patent.

15 And Doctor Heller was -- was able to analyze the cost
16 benefits of these patents.

17 Q. And what ultimately was the results of your analysis for
18 both the '048 and '411 Patents as it related to cost savings?

19 A. So based on the analysis of Doctor Heller, the cost
20 savings due to the '048 Patent are between 5.77 percent to 7.5
21 percent, and the cost savings due to the '411 Patent are
22 between 11.54 percent to 15 percent.

23 Q. And is it the case for the '048 Patent, the chip area
24 without using the patents would be about seven-and-a-half to
25 10 percent larger? Is that right?

1 A. Yes.

2 Q. And for the '411 Patent, is it the case that if CommScope
3 wasn't using these patents, that chip area would be somewhere
4 between 15 and 20 percent larger?

5 A. Yes.

6 Q. Thank you.

7 MR. HURT: No further questions. I pass the
8 witness, Your Honor.

9 THE COURT: All right. Ladies and gentlemen, we're
10 going to take a short recess, and then we'll proceed with
11 cross-examination by the Defendant.

12 If you'll simply close your notebooks and leave them in
13 your chairs, don't discuss the case among yourselves, and
14 follow all my other instructions, please, and we'll be back
15 here shortly. And try to keep this to about 10 or 12 minutes
16 so we can keep going.

17 The jury's excused for recess.

18 (Whereupon, the jury left the courtroom.)

19 THE COURT: The Court stands in recess.

20 (Brief recess.)

21 THE COURT: Be seated, please.

22 Mr. Barton, are you prepared to proceed with
23 cross-examination of the witness?

24 MR. BARTON: Yes, I am, Your Honor.

25 THE COURT: All right. Let's bring in the jury,

1 please.

2 (Whereupon, the jury entered the courtroom.)

3 THE COURT: Welcome back, ladies and gentlemen of
4 the jury. Please have a seat.

5 As I mentioned just before recess, we'll continue with
6 the cross-examination of the witness by Defense counsel.

7 Mr. Barton, you may proceed.

8 MR. BARTON: Thank you, Your Honor. And I believe
9 we already distributed binders.

10 CROSS EXAMINATION

11 BY MR. BARTON:

12 Q. Good morning, Doctor Cooklev.

13 A. Good morning.

14 Q. We've never met before. Correct?

15 A. I don't think so.

16 Q. Okay. Well, my name is Ross Barton, and I'm one of the
17 attorneys for CommScope, and I'm going to ask you a few
18 questions about your opinions. Okay?

19 A. Okay.

20 Q. All right. Let's start at the beginning and talk about
21 your role as an expert. Is that okay?

22 A. I'm okay with it.

23 Q. All right. So your job as an expert in this case is to
24 provide objective opinions. Is that fair?

25 A. That is correct.

1 Q. And you don't have any personal interest at stake in this
2 case, do you?

3 A. I do not.

4 Q. So you're just here to call balls and strikes. Is that
5 fair?

6 A. I'm here to give objective opinion.

7 Q. Okay. So before we get into the details of your
8 opinions, I want to make sure I understand a little bit about
9 your relationship with the Plaintiff. Is that okay?

10 A. Okay.

11 Q. Now, you understand that the patents in this case, all
12 seven of them, came from a company called Aware. Right?

13 A. Yes.

14 Q. And if I understand correctly, you were an employee of
15 Aware from about 2000 to 2002. Is that correct?

16 A. That's correct.

17 Q. Okay.

18 MR. BARTON: Now, Ms. Brunson, can I have the
19 projector, please? Thank you.

20 Q. (BY MR. BARTON) And this was your slide that you
21 presented to the jury regarding your professional background.
22 Correct?

23 A. Yes.

24 Q. Okay. And you list here DSL standards experience. And I
25 believe, and I wrote this down, that you testified that you

1 worked at the ITU. Is that correct?

2 A. I was not working for the ITU. I attended standards
3 committee meetings that -- ITU committee meetings. In that
4 sense, I worked at the ITU.

5 Q. Okay. But when you were working at the ITU, you were
6 actually an Aware employee. Correct?

7 A. That's correct.

8 Q. Okay.

9 MR. BARTON: You can take that down, Ms. Brunson.

10 Q. (BY MR. BARTON) Now, that time period, 2000 to 2002,
11 that was right in the thick of it when DSL was being
12 developed. Is that fair?

13 A. I think that's fair.

14 Q. And during that time period, you were literally on
15 Aware's payroll. Right?

16 A. Yes, I was.

17 Q. Okay. Now, the way you became an employee at Aware is
18 you approached Aware and asked for a job. Right?

19 A. I think that can be said.

20 Q. Well, that's correct.

21 A. Yes. Yes.

22 Q. Okay. And, in fact, you specifically reached out to Mr.
23 Tzannes to ask for a job. Right?

24 A. That's correct.

25 Q. And it was, in fact, Mr. Tzannes who gave you that job at

1 Aware. Right?

2 A. Yes.

3 Q. And then you went to work at Aware, and Mr. Tzannes was
4 your boss. Correct?

5 A. Yes.

6 Q. He was your mentor. Correct?

7 A. Yes.

8 Q. Fair to say you were working pretty closely with Mr.
9 Tzannes while you were an employee of Aware. Right?

10 A. Yes.

11 Q. Okay. And eventually you and Mr. Tzannes became pretty
12 good friends. Right?

13 A. I have Mr. Tzannes in high regard, and I like to think
14 that, in addition to the professional relationship, that there
15 was a -- there was some personal friendship that will
16 naturally develop, I think.

17 Q. Sure. So you and your wife would go out with Mr. Tzannes
18 and his wife to dinner. Is that fair?

19 A. We didn't particularly dine that much, but perhaps once
20 or twice, yes.

21 Q. Okay. And after you left Aware in 2002, you maintained
22 that personal relationship with Mr. Tzannes. Right?

23 A. Yes, to -- yes, I think so.

24 Q. Okay. In fact, we can agree, Doctor Cooklev, that your
25 relationship with Mr. Tzannes is perhaps the reason you got

1 the call in this case from TQ Delta's experts to be an expert.
2 Right?

3 A. I mean, I can't speak for TQ Delta. Maybe that played
4 some role.

5 Q. Okay. Now, in this case you've been hired by TQ Delta to
6 offer opinions on infringement and validity. Right?

7 A. Yes.

8 Q. And just so we're clear, your opinion has been that every
9 claim you've evaluated in this case has been both valid and
10 infringed. Right?

11 A. Yes, that is my opinion.

12 Q. Okay. Let's explore why you may have that opinion. Is
13 that okay with you?

14 A. That's fine.

15 Q. Okay. Now, Doctor Cooklev, you're a named inventor on a
16 number of patents. Right?

17 A. Yes.

18 Q. Okay.

19 MR. BARTON: Ms. Brunson, if I can have the camera
20 again, please.

21 Q. (BY MR. BARTON) And, again, this is the slide you put up
22 while Mr. Hurt was establishing your credentials as an expert
23 in the field. Right?

24 A. Yes.

25 Q. And down here at the bottom left corner, you say,

1 inventor on 30-plus U.S. patents. Right?

2 A. Yes.

3 Q. And you made a point during your direct to say not just
4 30-plus but 32 precisely. Fair?

5 A. Yes.

6 Q. Okay. Now, what you didn't tell the jury was that a
7 bunch of those patents, those 32 patents, are actually patents
8 that belonged to Aware at some point. Right?

9 A. Yes.

10 Q. Okay. In fact, Doctor Cooklev, at least 21 of your 32
11 patents are Aware patents. Right?

12 A. They originate from -- and date back from my work at
13 Aware, yes.

14 Q. Okay. And when you were at Aware and you were filing
15 those patent applications that matured into patents, you were
16 paid about \$1500 per patent application. Is that right?

17 A. I believe that's correct. I think that's a typical rate
18 that companies use to compensate when a patent application is
19 filed.

20 MR. BARTON: Object as non-responsive, Your Honor.

21 THE COURT: The witness properly answered the
22 question when he said, "I believe that's correct." That
23 portion of the answer will remain. I'll sustain the objection
24 as to the balance of the answer.

25 Let's proceed.

1 Q. (BY MR. BARTON) Now, in addition to not telling the jury
2 about where those patents originated, you also didn't tell
3 them anything about who your co-inventors were on those 21
4 patent applications, did you?

5 A. I did not.

6 Q. Okay. You didn't tell the jury that for each and every
7 single one of those 21 patents that you were awarded while you
8 were at Aware, Mr. Tzannes was a named co-inventor. You
9 didn't tell them that, did you?

10 A. No, I did not.

11 Q. In fact, for the 21 Aware patents you list in your
12 resume, Mr. Tzannes is the first named inventor on every
13 single one of those patents, isn't he?

14 A. I think that's correct.

15 Q. So one of your qualifications to be an expert in this
16 case are your patents in this space, and every single one of
17 those Aware patents has Mr. Tzannes as a co-inventor. Right?

18 A. That's correct.

19 Q. All right. Now, I want to talk a little bit, Doctor
20 Cooklev, about your work experience after you left Aware. Is
21 that all right?

22 A. Okay.

23 Q. Okay. Now, since 2002, you've been a professor. Right?

24 A. Yes.

25 Q. At a number of different schools. Right?

1 A. Yes.

2 Q. Okay. But during that time, that same time period from
3 2002 to present, last 21 years or so, you've also been a
4 consultant. Right?

5 A. Yes. From time to time, yes.

6 Q. And in the last few years at least, you have provided
7 consulting services as an expert in patent cases. Right?

8 A. Yes.

9 Q. And to be clear, Doctor Cooklev, this case isn't the
10 first time you've provided expert testimony on behalf of a
11 patent holder, is it?

12 A. This is not the first time.

13 Q. Okay. And the reason, Doctor Cooklev, you keep getting
14 hired by patent owners is because they can count on you to say
15 that whatever patents you look at are valid and infringed.
16 Right?

17 A. I disagree with that.

18 Q. Okay. Well, when you gave us your expert report, you
19 also provided your resume to us. Right?

20 A. Yes.

21 Q. And in your resume, you listed off your legal consulting
22 activities over the last five years. Correct?

23 A. Yes.

24 Q. And can we agree that there were around 10 different
25 legal consulting engagements you listed in your resume during

1 that five-year look-back period, Doctor Cooklev?

2 A. I have not counted them, but I'll -- if you say 10, I'll
3 take your word for it.

4 Q. Okay. And in every single one of those 10 engagements,
5 you represented the patent owner, haven't you?

6 A. Yes.

7 Q. Okay. But, in fact, Doctor Cooklev, there are some other
8 legal consulting activities you've done in the past five years
9 that you didn't put in your resume, aren't there?

10 A. I -- at the moment I do not recall.

11 Q. Okay. Well, you've worked as a consultant for a company
12 called Smart Mobile in the last five years. Right?

13 A. Yes, I have.

14 Q. And that's not in your resume, is it?

15 A. I -- maybe I have not updated the resume, and maybe I
16 listed the cases in which I have been deposed, and I don't
17 think I have been deposed in connection with my work for Smart
18 Mobile.

19 Q. You've also worked for a company called 3G Licensing in
20 the last five years. Correct?

21 A. Yes, I was engaged by them in connection with another
22 case.

23 Q. Okay. And that's not in your resume, either, is it?

24 A. Again, I -- maybe I'll have to take your word for it. I
25 try to provide -- to list all the cases for which I have been

1 deposed. It's possible that I've missed a case.

2 Q. Okay. Another case or another company you worked for is
3 a company called Flexiworld. Right?

4 A. Yes. I have submitted two or three declarations.

5 Q. And, again, that's not in your resume, is it?

6 A. Well, maybe I'll take a look for that.

7 Q. Sure. It's tab 4?

8 A. Normally I try to list all of the cases on my resume,
9 again, for which I have been deposed. It is possible that
10 occasionally I have missed something.

11 Q. Okay. Now, the one thing that each of those three
12 companies, which are Flexiworld, 3G Licensing, and Smart
13 Mobile, half of the ones you did list in your resume, Doctor
14 Cooklev, is that each one of them is also a patent holder.
15 Right?

16 A. They are patent owners, yes.

17 Q. And in each one of those matters, Doctor Cooklev, you
18 opined that the patents are valid. Correct?

19 A. That was my opinion, yes.

20 Q. Okay. And for the matters you did list in your resume,
21 in every single one of those matters, every single one, you
22 came to the conclusion that all the patents you were looking
23 at were either valid or infringed or both. Right?

24 A. The -- I think that's correct.

25 Q. Okay. So stated another way, Doctor Cooklev, at no point

1 in the last five years of your consulting career have you
2 provided an opinion that any patent is not infringed by a
3 defendant. Right?

4 A. Well, that was a little too broad, but the -- the cases
5 that I have been worked on, yes. If we limit it to those
6 cases, yes.

7 Q. And at no point in the last five years have you provided
8 an opinion that any patent is invalid, have you?

9 A. Well, you mean provided an opinion in an expert report,
10 in a declaration, or provided just a verbal opinion?

11 Q. Have you provided an expert report or testimony in any
12 case that a patent is invalid in the last five years?

13 A. No, I have not.

14 Q. Let's turn to the substance of your opinions, Doctor
15 Cooklev. Is that okay?

16 A. That's fine.

17 Q. Now, just so the jury's clear, and I think Mr. Hurt
18 touched on this at the end, but you were asked to look at a
19 lot of different issues in this case. Right?

20 A. That's correct.

21 Q. And you understand that CommScope is going to have an
22 opportunity to call its own experts to present their opinions.
23 Right?

24 A. That's correct.

25 Q. And you know that CommScope's experts disagree with your

1 opinions. Right?

2 A. I understand that.

3 Q. All right. So just to be clear, of the seven patents at
4 issue in this case, you're only here to offer the jury
5 opinions about three of those seven. Right?

6 A. Yes. I testified earlier about three patents.

7 Q. And that's the '881, '048, and '411 Patents. Right?

8 A. Yes.

9 Q. So you don't have any opinions regarding infringement of
10 the other four patents. Right?

11 A. Well, I described what I was asked to do and what I did
12 earlier this morning.

13 Q. So let me maybe rephrase. You didn't provide any
14 testimony or opinions in your expert report regarding
15 infringement of the other four patents in this case. Right?

16 A. I was not asked to provide an opinion on that, and I'm
17 not testifying about that ultimate conclusion.

18 MR. BARTON: We can take down the -- thank you, Ms.
19 Brunson.

20 Q. (BY MR. BARTON) So for the three patents you did look
21 at, the '881, '048, and '411 Patents, you, of course,
22 determined that they are infringed. Right?

23 A. Yes.

24 Q. And you also provided some technical analyses regarding
25 damages. Right?

1 A. Yes, that's correct.

2 Q. So, for example, you gave some opinions that TQ Delta's
3 damages expert, Doctor Putnam, relied on in coming up with the
4 damages theory in this case. Right?

5 A. Yes. It's my understanding that my analysis is used by
6 Doctor Putnam.

7 Q. And specifically one of the things you opined on relating
8 to damages was something called the smallest saleable
9 patent-practicing unit. Right?

10 A. Yes.

11 Q. And what that is, the smallest saleable patent-practicing
12 unit, is the smallest item that practices the patented
13 invention that is sold as a single unit. Right?

14 A. Yes.

15 Q. The smallest saleable patent-practicing unit isn't
16 defined by what else is required to make that product work in
17 a commercial embodiment, is it?

18 A. I do not understand what else. I'm sorry. I do not
19 understand the question.

20 Q. Okay. Well, you know, in order to know what the smallest
21 saleable patent-practicing unit is, you have to make a
22 determination about what is required to practice the patent.
23 Right?

24 A. Yes.

25 Q. And your conclusion for the three patents you looked at

1 was that the entire modem or the entire main board of that
2 modem, not just the Broadcom chipset, was the smallest
3 saleable patent-practicing unit. Right?

4 A. Yes.

5 Q. And you understand that CommScope's experts disagree with
6 that. Fair?

7 A. I think that's fair to say.

8 Q. Now, your reasoning, if I understood correctly, is based
9 on the fact that the asserted claims in those patents recite a
10 transceiver. Do I have that right?

11 A. That is one reason for my opinion.

12 Q. Well, it's the opinion you gave. Right?

13 A. Again, that is one basis for my opinion.

14 Q. Okay. Now, in your opinion, Doctor Cooklev, there are
15 more things in the chip than just the Broadcom chip. Strike
16 that. There are more things in the product than just the
17 Broadcom chip that make up the transceiver. That was your
18 testimony. Right?

19 A. I mean, for example, yes, that's one of the bases for my
20 opinion.

21 Q. And one of the things you pointed to was something called
22 an analog front end. Right?

23 A. Yes.

24 Q. But you know that none of the claims of the three patents
25 you looked at cite an analog front end. Right?

1 A. I think that's correct.

2 Q. And you also know that the Court's construction of
3 transceiver doesn't say anything about analog front end, does
4 it?

5 A. I think that's correct.

6 Q. Now, in addition to your smallest saleable
7 patent-practicing unit analysis we just talked about, you also
8 provided other damages-related opinions to Doctor Putnam.
9 Right?

10 A. I am not exactly sure what at the moment. I gave
11 complete testimony a short while ago.

12 Q. I want to ask you questions about this process. Okay?

13 A. All right.

14 Q. Okay. So one of the things you testified about was your
15 opinion relating -- or work you did relating to the number of
16 patents that are essential to the DSL standards. Right?

17 A. Yes.

18 Q. And I think you said this is something you worked closely
19 with with Doctor Putnam. Do I understand that correctly?

20 A. Yes.

21 Q. Now, Doctor Putnam is TQ Delta's damages expert.
22 Correct?

23 A. Yes.

24 Q. And we'll hear from him a little later in trial. Right?

25 A. Yes.

1 Q. So what you were doing in your analysis was you were
2 trying to figure out the total number of patents, the universe
3 of patents with claims that are likely essential to DSL
4 standards. Right?

5 A. Yes.

6 Q. So when I say total number, you understand that includes
7 not just TQ Delta essential patents, but patents belonging to
8 anybody that have claims that are essential to the DSL
9 standards. Right?

10 A. Yes.

11 Q. And that would include patents from companies like
12 CommScope. Right?

13 A. Potentially.

14 Q. Intel. Right?

15 A. Potentially.

16 Q. Alcatel is another possible one. Right?

17 A. Potentially.

18 Q. Okay. And what Doctor Putnam was going to do with that
19 information is try to figure out what percentage of the
20 universe of patents that are essential to DSL belong to TQ
21 Delta. Right?

22 A. That is my understanding.

23 Q. Have you heard of that called a top-down analysis before?

24 A. I'm not sure that I am familiar with that.

25 Q. Okay. But the goal is to identify the total universe of

1 patents that are essential to DSL and then figure out how much
2 of that belongs to TQ Delta. Right?

3 A. That is my understanding.

4 Q. And you were providing inputs to him in that process.
5 Right?

6 A. That is my understanding, yes.

7 Q. And then Doctor Putnam then used your inputs to figure
8 out how much TQ Delta's patents are worth. Correct?

9 A. That is my understanding.

10 Q. Okay. So we're clear, if the universe of essential DSL
11 patents is small, then TQ Delta's share of that pie is going
12 to be bigger. Right?

13 A. I mean, that -- Doctor Putnam probably will -- is in a
14 better position than me to answer. I can only apply simple
15 math.

16 Q. Okay. But you understand if there is only 20 essential
17 DSL patents in the universe--right?--belonging to all these
18 different companies and TQ Delta has 10 of them, then TQ Delta
19 can say it has 50 percent of the DSL essential patents.
20 Right?

21 A. I think the math is right.

22 Q. But if your analysis revealed that there are a thousand
23 essential patents and TQ Delta still only has 10, then TQ
24 Delta's share is going to be much, much lower. Right?

25 A. Again, the math is right.

1 Q. All right. So let's look at how you got Doctor Putnam
2 what you considered to be the universe of DSL essential
3 patents. Okay?

4 A. Okay.

5 Q. So I believe you testified that you worked with Doctor
6 Putnam and his team to come up with these search terms to
7 identify a relevant universe of potential DSL standard
8 essential patents. Right?

9 A. Yes.

10 Q. And that's what we see here. You used search terms that
11 come up with 14,848 potential standard essential patents.
12 Right?

13 A. Yes.

14 Q. That's about 15,000, I think you said. Fair?

15 A. Fair.

16 Q. Okay. Then what you did is you identified a list of
17 keyword terms that you thought would make it less likely that
18 the patent claims of those patents would be standard
19 essential. Right?

20 A. Yes.

21 Q. Basically terms you used to knock out certain patents as
22 being less likely to be essential. Right?

23 A. Well, you said knock out. I mean, they are -- they just
24 are determined less likely to be standard essential.

25 Q. Okay. So you took those terms, those keyword search

1 terms, and you gave them to Doctor Putnam so he could filter
2 out patents out of those 15,000 patents. Right?

3 A. Again, those that are less likely, yes.

4 Q. And what you got back from Doctor Putnam at this point is
5 a list of 1100 patents out of 15,000 that you then took a
6 closer look at. Right?

7 A. That's correct.

8 Q. Okay. So of those nearly 15,000 patents in the first
9 set, there were 13,748 that you never took a look at.

10 Correct?

11 A. That is correct.

12 Q. So that's about 92 percent of the universe of potentially
13 essential patents that you never laid eyes on. Right?

14 A. Well, it is a statistical technique. Yes, I did not
15 analyze because this is a statistical technique. Those almost
16 14,000 patents were considered less likely to be standard
17 essential.

18 Q. Well, let's talk about some of the terms you gave to
19 Doctor Putnam to get rid of those 13,748 patents. Okay?

20 A. Okay.

21 Q. And one of the terms you identify is the word 'switches'.
22 Right?

23 MR. BARTON: Mr. Carrillo, if we could pull up a
24 demonstrative.

25 Q. (BY MR. BARTON) Now, I listed on this side the full

1 terms. Okay?

2 A. Okay.

3 Q. And you see there I've highlighted word 'switches'.

4 Right?

5 A. Yes.

6 Q. And keeping in the same vein, one of the other terms you
7 used to eliminate patents from consideration was 'switching'.
8 Correct?

9 A. Yes.

10 Q. So if the claims of one of those 15,000 patents had the
11 word 'switching' in it, you determined it was less likely to
12 be standard essential. Right?

13 A. Yes.

14 Q. Okay. But you know, Doctor Cooklev, that one of the
15 asserted claims at issue in this trial has the word
16 'switching' in the claim language itself. Right?

17 A. I do not remember at the moment all the claims. I
18 apologize.

19 Q. You don't know that claim 10 of the '835 Patent contains
20 the phrase 'the switching occurs on a predefined forward error
21 correction code word boundary'?

22 A. No. I -- I was familiar with that. I just said I did
23 not remember all the claims off the top of my head, if I may.

24 Q. In fairness, my question wasn't, do you remember all the
25 claims. Do you understand that claim 10 of the '835 Patent

1 includes the word 'switching'. Correct?

2 A. Again, if you say so.

3 Q. Okay. And you also know that, as we'll hear from Doctor
4 Madisetti, the '835 Patent is most definitely essential to the
5 DSL standards, in his view. Right?

6 A. I think he will -- he will be able better than me to
7 answer that question.

8 Q. So you don't know?

9 A. I do not want to -- I mean, as I said, he will be able
10 better than me to answer the question.

11 Q. So to be fair, Doctor Cooklev, you don't know if your
12 knock-out terms -- excuse me, your keyword search terms
13 excluded some of the very patents at issue in this case. Is
14 that your testimony?

15 A. I do not know that.

16 Q. Okay. There are some other terms you used to exclude
17 patents to review. Right? A lot of them here. Correct?

18 A. There are a number of -- of terms, yes.

19 Q. Okay. Some of those other terms seem to have nothing to
20 do with DSL, like karaoke and burglar. Do you see that?

21 A. Yes.

22 Q. Okay. But there are also some technical terms that you
23 included in these exclusionary search terms, too. Right?

24 A. Yes.

25 Q. Terms like voice, diode, echo, electrostatic, cellular,

1 voltage, antenna, address, telephone call. Right?

2 A. Yes.

3 Q. And in your view, those technical terms are so far afield
4 from DSL technology, that you felt they should be grouped
5 together with terms like karaoke and burglar. Correct?

6 A. Well, whether they are so far from DSL or just a little
7 far, I mean, it's -- they are on this list. Just
8 to -- because it wasn't possible for -- even for me to analyze
9 15,000 patents, I analyzed only 1100 patents.

10 Q. Well, they are far enough afield for you to not review
11 13,000 patents. Right?

12 A. Excuse me?

13 Q. I'll withdraw that question.

14 These terms, Doctor Cooklev, you testified that you used
15 the Derwent report for those? Correct?

16 A. Yes.

17 Q. How many of those terms are actually from Derwent?

18 A. I mean, the way I understand the question, all of them.

19 Q. Would it surprise you to learn that we discovered that
20 only 43 out of 360 of them were from Derwent?

21 A. I don't think this -- again, to the best of my
22 recollection right now, I don't think this was raised in any
23 expert report.

24 MR. BARTON: Object as non-responsive.

25 THE COURT: Restate your question.

1 MR. BARTON: Okay. I'll just move on, Your Honor.

2 Q. (BY MR. BARTON) There are some other search terms,
3 Doctor Cooklev, that I need you to explain to me. Okay?

4 A. Okay.

5 Q. All right. One of the words you included as a keyword
6 search term to eliminate certain patents is klystrons. Doctor
7 Cooklev, can you explain to the jury what klystrons, plural,
8 are?

9 A. I am afraid I cannot right now.

10 Q. So you don't even know what that term means. Right?

11 A. No, not -- not at the moment.

12 Q. Okay. Another term on your keyword list that you used to
13 eliminate patents from review is the word franking. Can you
14 explain to the jury what franking is?

15 A. I cannot at the moment.

16 Q. So, again, you just don't know what that term means.

17 A. I think, since the meaning of terms is an important
18 issue, I think that's correct.

19 Q. Another word is simply shown here as de. What does that
20 mean, Doctor Cooklev?

21 A. You know, I'm just not sure at the moment.

22 Q. When this term 'de' was applied to exclude some of these
23 13,000 patents you didn't look at, do you know whether it
24 would have excluded patents with claims that recited
25 deinterleavers?

1 A. I don't think so, but at the moment I'm not completely
2 sure.

3 Q. So you don't know, do you?

4 A. Maybe I don't think so is a little more accurate answer.

5 Q. Okay. But you do know that deinterleaving is a pretty
6 important term in this case. Right?

7 A. Yes.

8 Q. You spent several hours talking about deinterleaving on
9 direct. Right?

10 A. Yes.

11 Q. Okay. Now, finally, you made sure -- you wanted to make
12 sure in your keywords that you excluded any patent with the
13 term non-fossil in it. Right?

14 A. Yes.

15 Q. Okay. But apparently terms -- words or patents with the
16 term 'fossil' in it was something you'd want to take a closer
17 look at. Correct?

18 A. I don't think that's correct as stated.

19 Q. All right. Let's go back to your process.

20 Once you had these --

21 MR. BARTON: If I could have the projector? Thank
22 you.

23 Q. (BY MR. BARTON) Once you had these 1100 patents, you
24 manually reviewed them by reading them and marking them up.
25 Right?

1 A. Yes.

2 Q. And ultimately you concluded that from your 1100 patents,
3 there were only 33 patents that were likely essential to one
4 or more of the DSL standards. Right?

5 A. Yes.

6 Q. And that, taking us back, that's the universe. There's
7 33 patents in the universe of patents that you look at that
8 are essential. Right?

9 A. I don't completely agree. These are likely standard
10 essential, so that is the language that I use. So as likely
11 standard essential, yes.

12 Q. And some of these patents are TQ Delta patents, and some
13 of them belong to other companies in the industry. Right?

14 A. Yes.

15 Q. And, again, Doctor Cooklev, you understand that Doctor
16 Putnam used your results to draw conclusions about how much
17 money he thinks CommScope would owe if they infringed. Right?

18 A. Yes. That's my understanding.

19 Q. Now, one of the 33 patents you determined was likely
20 standard essential was the '411 Patent you talked about on
21 direct. Right?

22 A. Yes.

23 Q. So let's be real clear, Doctor Cooklev. The '411 Patent
24 is not standard essential. Right?

25 A. As I testified, whether yesterday or today, but strictly

1 speaking, it is not standard essential.

2 Q. Okay. So right now we know that some of the patents you
3 identified as likely standard essential are, in fact, not
4 standard essential. Right?

5 A. Well, I said that although strictly speaking and I think
6 this is important in this case, strictly speaking, it is not.
7 In practice, implementors do practice the '411 Patent.

8 Q. Is the '411 Patent standard essential? Yes or no.

9 A. I think I answered that, strictly speaking, it is not.

10 Q. Okay. We also know that in your analysis you did exclude
11 patents as less likely to be essential that TQ Delta is here
12 today saying are essential, like the '835 Patent. Correct?

13 A. I am not sure that I can agree with that.

14 Q. Because you don't know what's in the '835 Patent. Right?

15 A. At the moment I -- I do not.

16 Q. Okay. Now, as part of your analysis, you identified four
17 patents owned by another company called Sisvel as likely
18 essential to the DSL standards. Right?

19 A. I do not remember at the moment the list of companies
20 that own these -- these patents.

21 Q. Okay. Well, see if we can refresh your recollection.
22 You should have your expert report available to you. And if
23 you will turn to paragraph 1314.

24 A. 1314?

25 Q. Correct.

1 A. Yes. I'm there.

2 Q. Do you see in that paragraph -- do you have it in front
3 of you, sir?

4 A. Yes, I do.

5 Q. Okay. And do you see in that paragraph where you
6 identified five patents owned by Sisvel amongst the 1100
7 potentially essential?

8 A. Yes, I do.

9 Q. And then you determined further that there were four of
10 them that, after your manual review process, you determined to
11 be likely essential. Right?

12 A. Yes.

13 Q. Now, in your opinion, Doctor Cooklev, these Sisvel
14 patents are essential to DSL, but they are less valuable than
15 the TQ Delta patents asserted here. Right?

16 MR. HURT: Objection, Your Honor. May we approach?
17 This relates to a pretrial ruling.

18 THE COURT: Approach the bench.

19 (The following was had outside the hearing of the
20 jury.)

21 THE COURT: What's your objection, Mr. Hurt?

22 MR. HURT: The objection is 403. This was struck
23 out of Doctor Becker's report on this Sisvel comparability.
24 So there's no analysis in the case that any of the Sisvel
25 patents are technologically comparable or not. And now,

1 through cross-examination, we're having a line of questioning
2 that's trying to back door that comparability opinion that the
3 Court struck for lacking an adequate support through this
4 witness.

5 And so we'd object on that basis that it's not relevant
6 to any issue in the case. And it's highly prejudicial
7 given -- for the reasons that the Court struck it on the
8 *Daubert* basis. You can't get through cross --

9 THE COURT: I understand your objection.

10 What's your response, Mr. Barton?

11 MR. BARTON: Your Honor, this expert has testified
12 that he provided information to Doctor Putnam to form the
13 basis of Doctor Putnam's damages theory. Doctor Putnam
14 testifies at length that every single standard essential
15 patent has the same value. This witness took an exact
16 opposite position in his report in the section dealing with
17 the information he fed to Doctor Putnam.

18 I should be able to explore the contradictory positions
19 taken by TQ Delta's experts regarding the value of standard
20 essential patents.

21 THE COURT: Obviously I don't have Doctor Putnam's
22 report in front of me or have it memorized. To what extent
23 does Doctor Putnam rely upon this type of opinion testimony
24 from Doctor Cooklev?

25 MR. BARTON: Doctor Cooklev's inputs to Doctor

1 Putnam's analysis are the foundation for his top-down
2 analysis. And after a bunch of machinations, he gets to the
3 point where he says every single patent -- every standard
4 essential patent is worth 33 cents.

5 THE COURT: Mr. Hurt, do you have any response?

6 MR. HURT: I don't believe that's an accurate
7 characterization. My understanding is that Doctor Putnam uses
8 that average to be conservative in his analysis. There is not
9 a comparison between the TQ Delta patents and the Sisvel
10 patents in any way that's done --

11 THE COURT: Well, if Doctor Becker's report that
12 relied on this material was circumscribed through *Daubert* and
13 that's no longer part of what he's been able -- Doctor
14 Becker's been able to testify to, then I think your objection
15 has merit.

16 But it appears that there may be more than one expert
17 that relied or at least the allegation is relied on this
18 testimony and this opinion testimony from Doctor Cooklev. If
19 I need to get Doctor Putnam's report and see if there really
20 is a nexus between this opinion testimony from Doctor Cooklev
21 and what Doctor Putnam says, then I can do that. But I'm
22 going to have to send the jury out and get the report and
23 we're going to have to dig into it.

24 MR. BARTON: I want to be real clear, Your Honor.
25 So what this expert, Doctor Cooklev, does is he goes through

1 this top-down analysis where he knocks things out, he comes
2 down to 33 patents, then it's extrapolated out to come to a
3 total number in the universe of essential patents, and Doctor
4 Putnam then uses that to get to his top-down number and to
5 apportion TQ Delta's share.

6 He then analyzes it all and comes up with a conclusion
7 that every single patent is -- of TQ Delta's is worth the
8 same.

9 And all I'm trying to explore is an opinion from this
10 expert on the value of standard essential patents in the set
11 that he gave to Doctor Putnam. I'm not trying to introduce
12 this via Doctor Becker. We're simply trying to show that TQ
13 Delta's experts are not aligned on the notion that every
14 patent is worth the same.

15 THE COURT: All right.

16 MR. BARTON: Every essential patent, I should say.

17 THE COURT: Do you dispute that assertion, Mr. Hurt,
18 that Doctor Putnam does, in fact, rely on Doctor Cooklev's
19 opinions of this type for a material purpose?

20 MR. HURT: Yes, Your Honor. What Doctor Putnam
21 relies on is the numbers that Mr. Barton mentioned. There's
22 no reliance on Sisvel or any other companies. But to the
23 extent --

24 THE COURT: I mean, if you two are going to sit up
25 here and tell me different stories about what Putnam does and

1 doesn't rely on, the only way I can handle it is get the
2 report and dig into it.

3 MR. BARTON: I think we're aligned on what he relies
4 on, which is to say, he relies on the numerical inputs of this
5 witness that here is the universe of standard essential
6 patents.

7 Doctor Putnam then takes that and concludes that here's
8 the numbers, the dollar values I'm going to assign to them
9 based on the theory that they're all of equal value. This
10 witness provided opinion testimony in his report saying, in
11 that set he provided to Putnam, they are not all of equal
12 value. That's all I'm trying to establish.

13 MR. HURT: I think that's okay, Your Honor, if
14 that's the question.

15 THE COURT: All right. While I have you two here, I
16 noticed you -- Mr. Barton, you referred Doctor Cooklev to his
17 report, and then you asked him yes or no questions about what
18 his report did or didn't cover.

19 If you're going to use his report to impeach him, then he
20 needs to be refreshed without reciting what's in there, and
21 then you need to ask him the question after he's been
22 refreshed. And if he gives an answer inconsistent with what's
23 in his report, then you can ask for leave to publish the
24 report.

25 But, otherwise, you need to ask him what his opinions are

1 and not have him refer to his report. The only reason to
2 refer to his report is potentially for impeachment.

3 MR. BARTON: I understand. And I thought I was
4 refreshing his recollection. So I wasn't trying to impeach
5 him or publish it. I thought I had refreshed his
6 recollection. That's all, Your Honor. So I apologize.

7 THE COURT: Typically when you refresh recollection,
8 you refer the witness to a given opportunity to review it
9 rather than turn to this paragraph, this paragraph says such
10 and such, doesn't it. I mean, it seemed like a pretty cursory
11 refreshment to me. But, anyway, if it's not impeachment, then
12 we understand each other.

13 MR. BARTON: Yep.

14 THE COURT: All right. Given this colloquy up here,
15 I'll permit Mr. Barton to explore the issue as you both agreed
16 to and identified, but not further. Okay?

17 MR. BARTON: Understood.

18 THE COURT: Understood?

19 MR. HURT: Thank you, Your Honor.

20 THE COURT: All right.

21 (The following was had in the presence and hearing
22 of the jury.)

23 THE COURT: Let's proceed.

24 Q. (BY MR. BARTON) So, Doctor Cooklev, we agree that in
25 your review you concluded or you opined that the Sisvel

1 patents are not of the same value as the TQ Delta ones.

2 Correct?

3 A. I'm not sure I can completely agree. I'm providing an
4 analysis from a technical perspective, and you emphasized the
5 word 'value'. And I am not an expert to determine how
6 valuable Sisvel's patent portfolio or TQ Delta's patent
7 portfolio would be.

8 Q. So you're not here to testify that the technical value
9 correlates to the monetary value. Is that fair?

10 A. I don't think so.

11 Q. It's not fair?

12 A. I wouldn't say that the technical -- you said technical
13 value does not correlate to the monetary value, and I do not
14 agree with that.

15 Q. Okay. Did you analyze the other 33 patents that you
16 identified as likely standard essential, did you analyze them
17 to determine the relative value of those patents?

18 A. Well, my analysis is completely stated in my expert
19 report, and I am not completely sure what you mean by relative
20 value.

21 Q. Did you analyze the full set of 33 likely standard
22 essential patents that were the result of this process to
23 determine whether some were more valuable than others?

24 A. All of my opinions are stated in my expert report. And
25 if you point me to a paragraph in my report, maybe I could

1 give a better answer. So questions such as valuable or
2 relative value, then I'm -- I'm not quite certain right now.

3 MR. BARTON: Object as non-responsive, Your Honor.

4 THE COURT: Overruled. Effectively the witness is
5 saying he doesn't understand, as I read the response. Either
6 restate the question or move on.

7 MR. BARTON: I'm going to move on, Your Honor.

8 Q. (BY MR. BARTON) And, Doctor Cooklev, I want to ask you
9 some questions about your infringement analysis for the '881
10 Patent. Is that okay?

11 A. Okay.

12 Q. All right. And the '881 Patent is the last one you dealt
13 with in your presentation, and that's the one that deals with
14 bonded transceivers. Right?

15 A. Yes.

16 Q. Okay. So, first of all, I want to make sure the jury
17 really understands what that feature is. Is that okay?

18 A. Yes.

19 Q. So when we're talking about bonding, we're talking about
20 a situation where the data coming to and from the customer's
21 home is carried over two lines. Right?

22 A. Yes.

23 Q. We're talking about bonding. We're bonding those two
24 lines together. Right?

25 A. Yes.

1 Q. So, practically speaking, bonding is something that's
2 only used when the customer in their home has two separate
3 phone lines coming into their house or home. Right?

4 A. Yes.

5 Q. So if the customer has just one phone line coming into
6 their house, they can't take advantage of this feature, can
7 they?

8 A. If there is only one phone line, yes, they cannot.

9 Q. And to be clear, Doctor Cooklev, you understand that the
10 BGW210 modem accused in this case, the physical box itself
11 cannot connect two separate phone lines without a separate
12 connector that allows those phone lines, those two phone
13 lines, to be connected. Right? You know that.

14 A. Do I know -- at the moment I do not recall stating that
15 or giving this opinion.

16 Q. So you never bothered to figure out whether the CommScope
17 products as sold to CommScope's customers can connect to two
18 phone lines without the addition of other equipment?

19 A. In my opinion, six of the seven accused products are
20 capable of bonding.

21 Q. My question, Doctor Cooklev, was you never bothered to
22 figure out whether the BGW210, product of the highest volume
23 in this case, can connect to two phone lines without the
24 addition of other equipment, did you?

25 A. I'm not sure I agree entirely with what is said. The

1 BGW210 is capable of bonding, which is the relevant inquiry
2 for my -- in my analysis.

3 Q. Well, we talked, Doctor Cooklev, that in order to do
4 bonding, you have to have two phone lines. Right?

5 A. Yes.

6 Q. Those phone lines have to hook into the box. Correct?

7 A. You have to have two phone lines.

8 Q. And those phone lines have to be connected to the box
9 somehow. Correct?

10 A. They have to be connected somehow.

11 Q. And you don't know whether the BGW210, the physical box
12 itself, can even accept two separate phone lines, do you?

13 A. Based on my analysis, the BGW210 is capable of bonding
14 and will accept two phone lines.

15 Q. It will accept phone lines into the back of that box.
16 That's your testimony.

17 A. Well, it is capable of bonding, yes.

18 Q. So it will accept two physical phone lines into the back
19 of that box. Is that your testimony?

20 A. Well, or it may be -- it can accept two phone lines. It
21 can accept two phone lines.

22 Q. Okay. Now, we can agree that claim 17 of the '881 Patent
23 recites a transmission parameter value used, quote, to reduce
24 a difference in latency between the bonded transceivers.
25 Right?

1 A. I think that's correct.

2 Q. And so what that means is if the first phone line has
3 this data rate, a high data rate, and the other phone line has
4 a lower data rate, we're going to shrink that difference.
5 Right?

6 A. Shrink the difference in data rate?

7 Q. Sorry. I misspoke. I'll withdraw the question and ask a
8 better one. Okay?

9 A. Okay.

10 Q. So what we're talking about in this patent is if we have
11 one line that has a high latency and another line that has a
12 lower latency, this patent talks about using a parameter to
13 reduce the difference in latency.

14 A. Using transmission parameters to reduce the difference in
15 latency.

16 Q. Reduce the difference. Right?

17 A. Yes.

18 Q. Okay. And we can all agree that reducing a difference in
19 latency like that is something different than just reducing
20 latency. Correct?

21 A. It's -- we're looking at the difference in the latency of
22 the two lines.

23 Q. Right. The difference, not the overall latency. Right?

24 A. Not the overall latency.

25 Q. Okay. And words are important. Fair?

1 A. Yes.

2 Q. And you were here when Mr. Dacus did the football/soccer
3 ball analogy. Right?

4 A. I was here.

5 Q. And you understand that if the accused products don't
6 reduce a difference in latency, there's no infringement.
7 Right?

8 A. Well, I -- you are asking me to assume something that I
9 know is incorrect.

10 Q. No. I'm asking if you understand, in performing your
11 infringement analysis, that if the accused product does not
12 reduce the difference in latency, then there's no
13 infringement. Right?

14 A. I agree that if the claim is not met, there wouldn't be
15 infringement.

16 Q. Okay. And the claim wouldn't be met if it doesn't reduce
17 a difference in latency. Right?

18 A. The claim wouldn't be met if the claim language is not
19 met.

20 MR. BARTON: Object as non-responsive, Your Honor.

21 THE COURT: Sustained.

22 Doctor Cooklev, you need to answer the question that's
23 asked. Mr. Hurt's going to have an opportunity to follow up
24 on anything that needs to be readdressed after Mr. Barton's
25 finished with his cross-examination. But until that happens,

1 you need to answer the question as it's asked. All right?

2 THE WITNESS: Yes, Your Honor.

3 THE COURT: All right. Let's proceed.

4 Q. (BY MR. BARTON) Let me ask it again. You agree that
5 your infringement analysis, if the accused product does not
6 reduce a difference in latency, then there is no infringement.
7 Right?

8 A. Yes.

9 Q. Okay. And the code you point to in the accused product
10 is something or a feature called max differential delay. Do I
11 have that right?

12 A. I believe you did. I don't have it in front of me, but I
13 believe you did, yes.

14 Q. Okay. And max differential delay is a variable that, as
15 its name suggests, sets a maximum latency between two bonded
16 signals. Right?

17 A. That is the max differential delay.

18 Q. It's the maximum difference. Right?

19 A. Yes, it is --

20 Q. Go ahead.

21 A. It is related to the maximum latency difference.

22 Q. Okay. So what it says is, you can't get that difference
23 any higher than this number. Right?

24 A. I think with that detail, maybe we have to look at
25 something more specific in order for me to agree.

1 Q. Okay. Well, in your direct testimony, I believe you
2 testified that this variable, maximum differential delay, is
3 something that reduces a difference in latency. Am I
4 understanding that correctly?

5 A. Not quite.

6 Q. Okay. Well, let's move on and let's look at the '048
7 Patent. Okay?

8 A. Okay.

9 Q. And just to orient or reorient the jury, the '048 Patent
10 is one of the shared memory patents you testified about.
11 Correct?

12 A. Yes.

13 Q. And the other shared memory patent is the '411. Right?

14 A. Yes.

15 Q. Okay. You were here for Mr. Tzannes' testimony.
16 Correct?

17 A. Yes.

18 Q. And you heard him testify about certain things become
19 adopted into the standard. Right?

20 A. I heard his testimony, yes.

21 Q. Okay. Just to be clear, though, Doctor Cooklev, the
22 technology of the '048 Patent was not adopted into the
23 standard, was it?

24 A. Well, I wouldn't quite agree with that.

25 Q. You can agree that it is not essential. Right?

1 A. I said that, strictly speaking, it is not essential. I
2 can explain, but the standard does refer -- the standard
3 itself refers to shared memory.

4 Q. So in your view, the '048 Patent is not standard
5 essential but was adopted into the standard. Is that right?

6 A. And there are questions the answer to which is not really
7 binary. I think I explained everything that, strictly
8 speaking, it is not essential, but largely the -- what is
9 claimed in the patent, largely we can see that it is present
10 in the standard.

11 Q. Largely but not completely. Correct?

12 A. I mean, that -- that comes to something that's
13 reasonable. I said, strictly speaking, it is possible, it is
14 possible to build equipment that does not comply. That's
15 possible. It's just it's not being done.

16 Q. Okay. Let's turn to the substance of your opinions on
17 the '048. Now, you understand that the key dispute for the
18 '048 Patent is whether the accused products transmit or
19 receive a message specifying a maximum number of bytes of
20 memory available to be allocated to the deinterleaver. Right?

21 A. I believe that is correct.

22 Q. Okay. And I want to make sure I heard you right. The
23 thing in your testimony that you said in the CommScope
24 products satisfies this limitation is a field and a message
25 called max_delay_octets. Do I have that right?

1 A. That is part of the O-PMS message. Yes.

2 Q. Got it. And in your opinion, max_delay_octets specifies
3 a maximum number of bytes of memory. Right?

4 A. Yes. The standard says so.

5 Q. Okay. And I think you even said you know that it's a
6 maximum because max is max. Right?

7 A. Yes.

8 Q. But delay is not delay. Right?

9 A. Well, I'm not sure what you mean.

10 Q. Okay. Doctor Cooklev, I'm assuming that you from time to
11 time have to fly on a plane. Is that fair?

12 A. Yes.

13 Q. Okay. And if you're anything like me, sometimes those
14 flight schedules don't go according to plan. Does that sound
15 familiar?

16 A. Yes.

17 Q. Okay. Sometimes a flight is delayed. Right?

18 A. Yes.

19 Q. And when the airline tells you the flight's delayed,
20 they'll tell you how long it's delayed. Right?

21 A. Usually, yes.

22 Q. It might be 30 minutes; might be two hours. Fair?

23 A. Yes.

24 Q. Okay. And that's because, as we all know, delay is
25 measured in time. Right?

1 A. Yes.

2 Q. Okay. You've never had American Airlines call you up and
3 tell you that your flight out of D/FW is 300 miles delayed,
4 have you?

5 A. I have not yet.

6 Q. Okay. Let's turn to the '411 Patent. Is that okay?

7 A. Yes.

8 Q. Now, this is another one of the shared memory patents.
9 Right?

10 A. Yes.

11 Q. And this one, again, it's shared memory between the
12 interleaver and deinterleaver. Correct?

13 A. Yes, associated with the retransmission function.

14 Q. Okay. And if I understand correctly, for the '411 Patent
15 you were looking at both VDSL2 and another standard called
16 G.INP.

17 A. Yes.

18 Q. And what is G.INP?

19 A. G.impulse noise protection.

20 MR. BARTON: Okay. And can we, Mr. Carrillo, pull
21 up I believe Exhibit 25.

22 Q. (BY MR. BARTON) This is the G.INP standard. Right?

23 A. Yes.

24 Q. Okay. And under the section where it says series G
25 transmission, it has the title of this one which is "Improved

1 Impulse Noise Protection for DSL Transceivers." Right?

2 A. Yes.

3 MR. BARTON: And if we could go to the third page
4 and just blow up that or expand the summary section, please.

5 Q. (BY MR. BARTON) And what it tells us here is G.INP
6 specifies techniques beyond those identified in the existing
7 DSL recommendations, including G.992.3. Right?

8 A. Yes.

9 Q. Okay. So G.992.3 is what is actually -- sorry. Let's go
10 to the end of it. And you say G.993.2. Right?

11 A. If we go to the end, yes.

12 Q. Okay. And G.993.2 is VDSL2. Correct?

13 A. Yes.

14 Q. Okay. And so what G.INP is is something that adds onto
15 the VDSL2 standard. Is that fair?

16 A. Yes.

17 Q. It is an extension of that VDSL2 standard. Right?

18 A. Yes.

19 Q. Okay. So the only question on the '411 Patent is --
20 again, just so we're crystal clear, the technology of the '411
21 Patent, just like the last patent you talked about, was not
22 adopted into the standard, was it?

23 A. My answer would be the same as for the '048 Patent.

24 Q. Was the '411 Patent adopted into the standard? Yes or
25 no.

1 A. I said I think a moment ago that some questions don't
2 quite have yes or no answers, and that although, strictly
3 speaking, yes, it is possible to build equipment that is
4 compliant with the standard and doesn't practice the '411
5 Patent, in practice this is not so.

6 Q. I didn't ask you about compliance and building products;
7 I asked was the '411 Patent adopted into the standard. Yes or
8 no.

9 A. And again, sometimes the answer is a little bit more
10 complex than just yes or no, but the standard did -- the
11 standard did include and did adopt techniques that are claimed
12 in the -- claimed by the '411 Patent.

13 Q. But not all of what's claimed in the '411 Patent.
14 Correct?

15 A. Well, it's -- I just, I think I answered that. Strictly
16 speaking -- I said I adopted the conservative approach in my
17 analysis, and in reaching this conclusion that it is possible
18 to build equipment that doesn't share memory, it's just that
19 the accused devices are not like this. The standard did adopt
20 the parameters in the O-PMS message max_delay_octet downstream
21 0 and downstream 1, and there is also max_delay_octet
22 downstream. So it adopted the techniques that enabled memory
23 sharing when we have written transmission.

24 MR. BARTON: I object as non-responsive, Your Honor.

25 THE COURT: Sustained. Doctor Cooklev, You have to

1 answer the questions as it's asked, not as you would prefer
2 that it be asked. The question was, "Was the '411 adopted
3 into the standard?" Was it adopted into the standard; was it
4 not adopted into the standard. Answer that question, please.

5 THE WITNESS: Yes, Your Honor.

6 Yes, it was adopted.

7 Q. (BY MR. BARTON) But it's not essential, is it?

8 A. Strictly speaking, it's not.

9 MR. BARTON: Pass the witness, Your Honor.

10 THE COURT: All right. Redirect.

11 Proceed when you're ready, Mr. Hurt.

12 MR. HURT: Thank you, Your Honor.

13 REDIRECT EXAMINATION

14 BY MR. HURT:

15 Q. Doctor Cooklev, how long ago were you employed at Aware?

16 A. More than 20 years ago.

17 Q. And does your relationship with Mr. Tzannes influence any
18 of your opinions in this case?

19 A. No.

20 Q. And do you remember when you were asked about the various
21 other expert engagements that you've taken on?

22 A. Yes, I do.

23 Q. When you're asked to take on a case, do you evaluate how
24 strong that case is?

25 A. I do examine the patents, yes.

1 Q. And would you take on a case if you didn't think it had
2 merit?

3 A. No. I would say no.

4 Q. Have you ever declined an engagement or potential
5 engagement?

6 A. Yes, I have.

7 MR. HURT: Mr. Diaz, if you would pull up slide
8 No. 180 to Doctor Cooklev's report.

9 Q. (BY MR. HURT) And, Doctor Cooklev, do you remember the
10 questions you were asked about smallest saleable patent
11 practicing unit?

12 A. Yes.

13 Q. And do you understand the Court construed that term as
14 requiring some type of shared circuitry between a transmitter
15 portion and a receiver portion?

16 A. Yes.

17 Q. And is that shared circuitry limited to what's in the
18 Broadcom chip?

19 A. No, it is not.

20 Q. And can you identify on this diagram for the jury where
21 that shared circuitry under the Court's construction of
22 'transceiver' is located?

23 A. There's a lot of shared circuitry between the transmitter
24 portion and the receiver portion. The shared circuitry
25 includes starting from the phone jack. There's isolation,

1 there are line drivers, so the shared circuitry includes at
2 least these components. But other components external to the
3 chip that enable this chip to operate, they also share. They
4 are not separate for the transceiver and the transmitter and
5 the receiver portion.

6 Q. And do you recall some questions about the two phone
7 jacks for the BGW210?

8 A. I do remember.

9 Q. And do you see on this diagram there is an RJ14 jack
10 labeled No. 5?

11 A. Yes.

12 Q. Is RJ14 a standard that allows for two phone lines?

13 A. Yes.

14 Q. And can you explain to the jury how this piece of the
15 figure shows that the BGW is configurable to and actually can
16 be used to perform bonding?

17 A. Yes. Well, this phone jack will accept two phone lines.
18 Actually this was the motivation why bonding. It made sense
19 to develop bonding. So -- and we see here -- from the phone
20 jack we see the two -- we see the circuitry for the two
21 transceivers leading to and from the phone jack.

22 Q. And I want to ask you a question about the -- let me
23 strike that.

24 Do you remember when Mr. Barton asked you if all of your
25 opinions in this case were only for the three patents? Do you

1 remember that?

2 A. Generally, yes.

3 Q. For your opinions that relate to damages such as the
4 smallest saleable patent practicing unit, the inducement
5 evidence, these other issues, what patents did those apply to?

6 A. They apply to all of the asserted patents.

7 Q. So would that be all seven?

8 A. All seven.

9 Q. Okay.

10 MR. HURT: Mr. Diaz, can you go to slide 182,
11 please?

12 Q. (BY MR. HURT) Do you remember questions, Doctor Cooklev,
13 about your analysis you performed for Doctor Putnam --

14 A. Yes.

15 Q. -- relating to standard essential patents?

16 A. Yes.

17 Q. And do you remember -- I tried to count, but I lost
18 count. Do you remember about how many times Mr. Barton
19 said your analysis excluded patents from consideration?

20 A. I think he said that.

21 Q. Did you exclude from consideration any patents?

22 A. No, I did not. I just -- some were in this way deemed
23 less likely to be standard essential.

24 Q. And can you explain for the jury a little bit how your
25 process would use the search terms to sample some patents at

1 a little bit lower rate and sample others at a higher rate?

2 A. Yes. So because evaluating 15,000 patents is just too
3 much. It's a very large set of patents. So as a result of
4 applying these key words, these key words did not eliminate
5 completely. They don't say if these key words are present the
6 patent is absolutely not DSL standard essential. That is not
7 the case. It's just that it's considered less likely. And
8 it's my understanding that based on these key words, Doctor
9 Putnam sampled them or included them just at the lower rate.
10 He -- after my analysis is done, he extrapolated to -- for the
11 purpose of his analysis.

12 Q. And do you remember questions about on the -- do you
13 remember getting questions about these search terms?

14 A. Yes, I do.

15 Q. And can you explain for the jury how you used this
16 Derwent Innovation Index to get these terms?

17 A. Well, these are terms that I found that the Derwent
18 Innovations database included. It's -- I found them
19 essentially there and that's why I came up with these key
20 words.

21 Q. Do you remember he asked you a question about one word
22 that was just 'de'. Do you remember that?

23 A. Yes.

24 Q. And he suggested -- do you remember that he suggested
25 that 'de' would hit on something like deinterleaving. Do you

1 remember that?

2 A. Yes, I do remember.

3 Q. In the 1100 patents that you reviewed, did they include
4 that -- did they include terms like deinterleaving or
5 demultiplexing or other terms that start with the letters
6 'de'?

7 A. I believe, yes, the word deinterleaver did appear in the
8 1100 patents. So it was not in the sense eliminated by -- as
9 a result of the key word 'de'.

10 Q. And about how long was your expert report in this case,
11 sir?

12 A. I submitted an expert report that's about 1,100 pages; in
13 that neighborhood.

14 Q. Do you think that 'de' may have just been a typo in the
15 table?

16 A. It's -- I don't want to preclude that. It's -- it is
17 possible. An expert report that's more than a thousand pages
18 is quite a bit.

19 Q. But, in any event, did the term 'de' move into the less
20 likely bucket patents that had words like deinterleaving or
21 deinterleaver?

22 A. No.

23 MR. HURT: If you could, Mr. Diaz, pull up slide
24 No. 51.

25 Q. (BY MR. HURT) Do you recall on cross examination,

1 Professor Cooklev, questions --

2 MR. HURT: Actually, Your Honor, this is source
3 code, so let me ask to seal the courtroom for this question.

4 THE COURT: All right. At counsel's request and to
5 protect the confidential information, I'll order the courtroom
6 sealed at this time. I'll direct that all persons present who
7 are not subject to the protective order that's been entered in
8 this case should excuse themselves and remain outside until
9 the courtroom is reopened and unsealed.

10 (Courtroom sealed.)

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(Courtroom unsealed.)

THE COURT: All right. The courtroom is unsealed.
You may proceed with additional cross examination.

1 MR. BARTON: Thank you, Your Honor.

2 RE CROSS EXAMINATION

3 BY MR. BARTON:

4 Q. Doctor Cooklev, I want to pick up where Mr. Hurt ended.
5 He was asking you something about comments in source code and
6 you were explaining that to the jury. Do you remember that?

7 A. Yes.

8 Q. Now, you and I both know comments aren't compiled.
9 Right?

10 A. Yes; they are not.

11 Q. And what that means, you could write anything in the
12 comment to source code and it's not going to impact in any way
13 what that product does. Right?

14 A. Yes, in general that's correct.

15 Q. Okay. Now, I want to ask you some questions about this
16 Derwent -- these search terms you listed.

17 MR. BARTON: And actually, Mr. Carrillo, if we could
18 pull up the final build to that demonstrative, please.

19 Q. (BY MR. BARTON) You recall questions about this. Right?

20 A. I do.

21 Q. All right. And one of the terms we talked about was
22 'de'. Right?

23 A. Yes.

24 Q. Okay. So we don't know what klystrons are and we don't
25 know what franking is. Right?

1 A. As far as definition, yeah, we don't know.

2 Q. Okay. What does 'de' by itself mean?

3 A. I cannot at the moment give a definition.

4 Q. Is that the post code for Germany?

5 A. Not in this context.

6 Q. Okay. So it could just be a typo is what I thought you
7 explained to Mr. Hurt. Right?

8 A. It's -- I mean, I don't want to rule out that
9 possibility.

10 Q. So we don't even at this point know which terms you
11 applied in this analysis, do we?

12 A. Not entirely correct. Even if to the extent -- even if
13 this is a typo, all the other terms are correct.

14 Q. Well, what should it have been?

15 A. Excuse me?

16 Q. If it's a typo, what should 'de' have been?

17 A. You know, I just -- I don't remember at the moment.
18 I could not possibly remember and answer this question.

19 Q. Okay. Now --

20 MR. BARTON: If I could have the projector,
21 Ms. Brunson.

22 Q. (BY MR. BARTON) To be clear, Doctor Putnam gave you
23 14,848 potential standard essential patents. Right?

24 A. He came up with this list, yes.

25 Q. You worked together with him to develop that.

1 A. I think in -- yes.

2 Q. You worked closely with him to develop that. Right?

3 A. Yes.

4 Q. Okay. And he went from 14,848 to 1100 potential SEPs
5 that you manually reviewed. Correct?

6 A. Yes.

7 Q. So that is 13,748 patents that were filtered as a result
8 of that process. Right?

9 A. They were sampled at the lower rate. So you used the
10 word 'filtered', and for this reason I'm not sure I could
11 entirely agree with the word 'filtered'.

12 Q. Let's see if you can agree with this. You do not lay
13 eyes on a single one of those 13,748 patents. Correct?

14 A. Yes.

15 Q. Okay. And the reason is, I believe you said, is it would
16 just be too much to analyze that many patents. Right?

17 A. Yes.

18 Q. Now, you've worked for TQ Delta for a while now. Right?

19 A. I have.

20 Q. And you've been paid, by my account, more than half a
21 million dollars by TQ Delta. Does that sound right?

22 A. Not for this case.

23 Q. Over the course of your work for TQ Delta, you've been
24 paid more than half a million dollars. Correct? Simply yes
25 or no.

1 A. Over the last 10 years, yes.

2 Q. Okay. And you understand, because you were here in court
3 the other day, that TQ Delta is seeking \$89 million from
4 CommScope in this case. Right?

5 A. Yes, I understand.

6 Q. But it just would have been too much work to look at
7 those patents. Right?

8 A. I believe yes.

9 Q. Okay.

10 MR. BARTON: No further questions, Your Honor. Pass
11 the witness.

12 THE COURT: Further redirect?

13 MR. HURT: Yes, Your Honor.

14 THE COURT: All right.

15 REDIRECT EXAMINATION

16 BY MR. HURT:

17 Q. Doctor Cooklev, for the words that were in your process
18 in the Derwent process, would you have copied those from the
19 Derwent Index?

20 A. Yes.

21 Q. Would that have included that 'de' term?

22 A. Yes. That's the process that I followed for all of the
23 key words.

24 Q. And do you recall the question about the code comments?

25 A. Yes, I do.

1 Q. Does that comment in the code accurately reflect how the
2 code works?

3 A. Yes, it does.

4 Q. Counsel seemed to suggest that the code might work
5 differently. Do you remember that?

6 A. I do remember.

7 Q. Did HE SHOW you any other code to prove that point?

8 A. No.

9 Q. Did any of CommScope's experts point to any other source
10 code in the CommScope accused products that would show that he
11 is right about how they work?

12 A. I don't think so.

13 Q. Okay.

14 MR. HURT: No further questions. Pass the witness.

15 THE COURT: All right. Additional cross
16 examination, Mr. Barton?

17 MR. BARTON: No, Your Honor.

18 THE COURT: Okay. Doctor Cooklev, you may step
19 down, sir.

20 Ladies and gentlemen of the jury, we're about 20 minutes
21 until 12:00. The next witness is going to be at least a
22 couple of hours. We're going to break for lunch a little
23 early. I suspect Ms. Clendening either has it there waiting
24 for you or it will be there shortly.

25 Please take your notebooks with you to the jury room

1 during the lunch break. Let me remind you to follow all my
2 instructions, including not to discuss anything about the case
3 with each other. And we will break for about somewhere
4 between 45 and 50 minutes and then we'll reconvene.

5 With that the jury's excused for lunch.

6 (Whereupon, the jury left the courtroom.)

7 THE COURT: Be seated, please.

8 Counsel, I've reviewed what's previously been submitted
9 with regard to a proposed set of final jury instructions and a
10 suggested verdict form in this case. I think the Court and
11 the parties would mutually benefit by revisiting of those
12 topics, and I'm going to direct that the parties jointly meet
13 and confer and prepare and submit again an updated and a
14 revised purported final jury instruction and verdict form.
15 I'd like to have that transmitted to my staff in Word form no
16 later than 3:00 tomorrow. If you'll do that, please, the
17 Court will appreciate it.

18 With that, we stand in recess for lunch.

19 (Lunch recess.)

20 THE COURT: Be seated, please.

21 Plaintiff, are you prepared to call your next witness?

22 MR. DAVIS: We are, Your Honor.

23 THE COURT: And this is Doctor Madisetti?

24 MR. DAVIS: Correct, Your Honor.

25 THE COURT: All right. If you'll bring in the jury,

1 please, Mr. Turner.

2 (Whereupon, the jury entered the courtroom.)

3 THE COURT: Welcome back, ladies and gentlemen.

4 Please have a seat.

5 I want the jury to know I do know how to tell time. I
6 told you 45 to 50 minutes, and we're about an hour and 20
7 minutes. There are things that come up sometimes that relate
8 to the case that you don't necessarily need to know about or
9 be involved in, but I do want you to know I do know how to
10 tell time. I'm sorry we're a little late.

11 All right. Plaintiff call your next witness.

12 MR. DAVIS: Your Honor, Plaintiff calls Doctor Vijay
13 Madisetti to the stand.

14 THE COURT: All right. Doctor Madisetti, if you
15 would come forward and be sworn by Ms. Brunson, our Courtroom
16 Deputy.

17 (Whereupon, the oath was administered by the Clerk.)

18 THE COURT: Please come around, have a seat on the
19 witness stand.

20 Mr. Chiplunkar, you may go to the podium and prepare for
21 the direct examination.

22 Am I correct, Mr. Davis, any binders have already been
23 distributed?

24 MR. DAVIS: That's correct, Your Honor.

25 THE COURT: All right. Thank you.

1 MR. CHIPLUNKAR: Afternoon. My name is Raj
2 Chiplunkar, and I am here on behalf of TQ Delta.

3 VIJAY MADISETTI, Ph.D., SWORN,
4 having been duly sworn, testified under oath as follows:

5 DIRECT EXAMINATION

6 BY MR. CHIPLUNKAR:

7 Q. Sir, please introduce yourself to the members of the
8 jury.

9 A. My name is Vijay Madiseti.

10 Q. And what do you do, Mr. Madiseti?

11 A. I am a professor at Georgia Tech in Atlanta.

12 Q. And, Professor Madiseti, can you please tell us
13 something about yourself?

14 A. I am married to Anita. I have a son, Raj, who is also a
15 student at Georgia Tech. I've lived in Atlanta for about 30
16 years.

17 Q. And why are you here today, Professor?

18 A. I'm here to offer opinions on infringement.

19 Q. And are there any specific patents you are here to
20 provide opinions on?

21 A. Yes.

22 Q. And would that be the '008 Patent, or the phase
23 scrambling patent, and the '835, or the DSL reboot patent
24 claims?

25 A. Yes.

1 Q. And are you being compensated for your time?

2 A. Yes.

3 Q. And is your compensation dependent on the outcome of this
4 case or your testimony?

5 A. No.

6 Q. Have you prepared a presentation that you'll be using
7 today?

8 A. I have.

9 Q. And is what's shown on your screen the first slide of
10 this presentation?

11 A. Yes.

12 MR. CHIPLUNKAR: Your Honor, may I publish the
13 slides to the jury?

14 THE COURT: You may, assuming that you qualify this
15 witness as an expert.

16 MR. CHIPLUNKAR: Thank you, Your Honor.

17 Q. (BY MR. CHIPLUNKAR) Professor, please describe your
18 education qualifications to the jury.

19 A. I have an undergraduate degree in electronics and
20 electrical communications. And then I went to Berkeley in
21 California, obtained my Ph.D. in electrical engineering and
22 computer sciences.

23 Since then, I've been teaching at The Georgia Tech, which
24 is a top university in Atlanta. I've been teaching there for
25 30 years. I teach, do research, develop new technologies, and

1 advise students.

2 Q. Can you provide some high points regarding your research
3 work?

4 A. I do a lot of research for various agencies, including
5 the U.S. government. I worked on defense-related projects for
6 the Air Force, for the Army. I also work with the industry
7 for leading-edge research for the past 30 years.

8 Q. Have you authored any textbooks that are used by
9 students?

10 A. Yes. I like writing books. My first book was in 1995 on
11 the extreme left. Since then, I've authored about a dozen
12 books, and some of these books are written there, and they
13 include communications signal processing, more recently in
14 cloud computing.

15 Q. And the opinions that you're going provide today relate
16 to multicarrier communications and interleaving. Correct,
17 Professor?

18 A. Yes.

19 Q. Have you done any work in the work of multicarrier
20 communications and interleaving?

21 A. Yes. I've done research. I teach courses on that area.
22 Here is an example of a paper from that time frame that
23 specifically focuses on multicarrier, which is OFDM. It also
24 looks specifically at interleaving, and this was work that I
25 did in early 2000 time frame.

1 Q. And, now, the '835 Patent also relates to error
2 correction. Correct?

3 A. Yes.

4 Q. Have you done any work in that area?

5 A. Yes. Here are some examples of the work I've done in
6 error correction codes and forward error correcting codes
7 since the mid 1990s. Here are a couple of examples of papers
8 that are published on these techniques.

9 Q. And you will be relying on DSL standards today for your
10 opinions. Right?

11 MR. STEVENS: Objection, Your Honor; leading.

12 Q. (BY MR. CHIPLUNKAR) What standards --

13 THE COURT: Just a minute, counsel. You need to let
14 the Court respond whenever an objection's raised. I'm going
15 to sustain that. You may rephrase it in a non-leading form.

16 Q. (BY MR. CHIPLUNKAR) What standards have you relied on
17 for your opinions today?

18 A. I've been relying on DSL standards which is digital
19 subscriber loop.

20 Q. Has any of your research influenced DSL standards?

21 A. Yes. Since the '90, I've worked on -- since the '80s,
22 I've worked on several areas that are directly related to
23 digital subscriber loops.

24 Here is an example of a paper from 1989 that I believe
25 has influenced certain ITU standards, for example, the G961

1 one where I specifically looked at multilevel codes that are
2 also being used in the standard, for example. These are some
3 of the examples of the work.

4 I've also made proposals to the T1D1 Standards Committee
5 which is the precursor of the T1E1 Standards Committee that
6 creates the DSL standards.

7 Q. And have you received any awards related to your teaching
8 and research?

9 A. Yes.

10 Q. And what are these awards?

11 A. Here are a couple of examples. One of them is the Terman
12 Award that was awarded to me by the American Society of
13 Engineering Education. This is awarded for contributions to
14 the profession while under the age of 45. And there on the
15 right is an award from my students who typically award these
16 to who they like.

17 Q. Now, are you a member of any professional organizations,
18 Professor?

19 A. Yes. I'm a member of the IEEE, which is the largest
20 professional organization in the world with 350,000 members,
21 and I was fortunate to be elected as a fellow of the IEEE,
22 which is a sort of unusual distinction that the society
23 offers.

24 MR. CHIPLUNKAR: Your Honor, at this time TQ Delta
25 offers Professor Madisetti as an expert in the field of

1 communication systems, including DSL systems and the subject
2 matter of the '008 and '835 Patents.

3 THE COURT: Is there objection?

4 MR. STEVENS: No objection, Your Honor.

5 THE COURT: Without objection, the Court will
6 recognize this witness as an expert in those designated
7 fields.

8 Please continue, counsel.

9 Q. (BY MR. CHIPLUNKAR) Professor Madisetti, what opinions
10 have you formed regarding CommScope's accused products in the
11 '008 and the '835 Patent claims?

12 A. I have -- I have offered opinions and present analysis of
13 these that CommScope's accused products practice claim 14 of
14 the U.S. Patent 8,090,008 and CommScope's accused products
15 practice claim 10 of the U.S. Patent 8,462,835.

16 Q. Professor Madisetti, which CommScope products infringe
17 claim 14 of the '008 and claim 10 of the '835 Patent?

18 A. I listed these here. They include the 5168N, the 5168NV,
19 the 5268AC, the BGW210, the NVG448, the NVG44X, and the
20 NVG599, and the Pace 5031NV.

21 And these utilize the DSL chipsets on the right: the
22 Broadcom 63168, the Broadcom 63148, and the Broadcom 63168,
23 and Broadcom 6368, three chips.

24 Q. And which document did you rely on for this information?

25 A. I rely on CommScope's supplemental response to ROG No. 8.

1 Q. Have you relied on any specific DSL standards for your
2 infringement opinions today?

3 A. Yes.

4 Q. Which specific standard?

5 A. I rely on the VDSL2 standard, which is G.993.2.

6 Q. And do the accused products implement the VDSL2 standard?

7 A. Yes.

8 Q. And what evidence did you rely on to conclude that a
9 CommScope product operates in accordance with the VDSL2
10 standard?

11 A. The data sheets that I show here. The data sheets
12 include the data sheets for BGW210 and others. These are
13 Exhibit 17, 19, 23 that explicitly show support for VDSL2,
14 which is G.993.2.

15 On the next page, we have additional products that rely
16 on Exhibits 18 and 21 that also show support for VDSL2.

17 Q. And are these product data sheets CommScope product data
18 sheets?

19 A. Yes, sir.

20 Q. Is there any other evidence from CommScope that you
21 relied on to conclude that the products support VDSL2?

22 A. Yes.

23 Q. And what is that evidence?

24 A. This is Exhibit 71 that other experts have also talked
25 about. It's called the CommScope's UberMatrix that reflects

1 joint work between CommScope and AT&T, as reflected in the
2 Miller deposition testimony on page 127.

3 Q. And does the UberMatrix support your opinion that the
4 accused products are compliant with the VDSL2 standard?

5 A. Yes. As shown below in the Excel spreadsheet, it is
6 shown on the left that it's VDSL. And on the right, it shows
7 that it's with a value of C. C says compliant.

8 Q. And now for which particular accused product is this
9 UberMatrix?

10 A. This particular product is for BGW-2 10.

11 Q. Did you similar Uber matrices for the other accused
12 products?

13 A. Yes, I did, and I confirmed they were all compliant.

14 Q. What portion of the VDSL2 standard provides a definition
15 for standard compliance?

16 A. The VDSL2 standard, for example, uses the words 'shall'
17 and 'must'. That is an example of words that are used for
18 compliance.

19 Q. Is there any other evidence that would support your
20 opinion that the products at issue here comply with the
21 mandatory requirements?

22 A. Yes. As Doctor Yu, who I cite here in his deposition
23 transcript, page 92, confirms that the Broadcom chips that --
24 that are used in the accused products meet the mandated
25 requirements of the G.993.2 standard, which is Exhibit 34.

1 Q. What evidence did you rely on in arriving at your
2 infringement opinions?

3 A. I looked at a lot of evidence--the standard itself, the
4 data sheets, deposition testimony, the UberMatrix, the block
5 diagrams. I looked at the source code. I evaluated it. I
6 looked at the source code specifications.

7 I also relied on product testing and simulations done by
8 Doctor Cooklev.

9 Q. Why did you rely on the VDSL2 standards?

10 A. Because the claims that are asserted have been adopted
11 into the VDSL standard, and they are also essential to the
12 VDSL2 standard. And the products that are accused are also
13 compliant with the VDSL2 standard.

14 Q. Did you analyze the source code for the CommScope accused
15 products?

16 A. Yes.

17 Q. And who developed the source code that you analyzed?

18 A. Both CommScope and Broadcom.

19 Q. And does the source code for the accused products
20 implement claim 14 and 10?

21 A. Yes.

22 Q. Does the source code that you analyzed implement the
23 portions of the VDSL2 standard that you rely on for your
24 infringement opinions?

25 A. Yes.

1 Q. Now, did you analyze the source code for all the accused
2 CommScope products?

3 A. Yes.

4 Q. Did you identify any differences between the source code
5 for the accused products as they relate to the claims?

6 A. There were no substantial -- there were no substantial
7 differences. They were materially the same.

8 Q. Professor Madisetti, please provide the jury with some
9 basic information regarding the '008 Patent?

10 A. The '008 Patent is the phase scrambling patent. It's
11 shown on this particular slide. It is Exhibit No. 4. And it
12 was -- it's the U.S. Patent 8,090,008.

13 Q. Now, has this patent expired, Doctor Madisetti?

14 A. Yes. I believe it was expired a year or two ago.

15 Q. And now while the patent was in force, what is your
16 opinion regarding the infringement of the claims of this
17 patent?

18 A. My opinion was then that these products practice the
19 claims of the '008 Patent.

20 Q. What are the inventions of the '008 Patent related to?

21 A. The inventions are important and they relate specifically
22 how to improve multicarrier systems to solve certain problems
23 that it identified as related to peak-to-average power ratio.

24 Q. Professor Madisetti, do the CommScope products include
25 infringed claim 14 of the '008 patent?

1 A. Yes.

2 Q. What is the first element of claim 14 that you analyzed?

3 A. The first element of claim 14 is the preamble, and it
4 recites, "a multicarrier system, including a first transceiver
5 that uses a plurality of carrier signals for modulating a bit
6 stream, wherein each carrier signal has a phase characteristic
7 associated with the bit stream."

8 Q. Now, did the Court provide a meaning for the term
9 'transceiver'?

10 A. Yes.

11 Q. And what was that meaning?

12 A. As stated on the slide, it's "a communication device
13 capable of transmitting and receiving data where the
14 transmitter portion and the receiver portion share at least
15 some common circuitry."

16 Q. And, now, what is depicted on this slide, Professor?

17 A. It's a block diagram or a schematic from the BGW210,
18 which is one of the accused products.

19 Q. Now, did you apply the Court's construction of
20 transceiver to the BGW210 product?

21 A. Yes. The transceiver shown includes a processor and
22 shared common circuitry, which is the analog front end, which
23 is the isolation transformer and the jack. And all these are
24 portions that are related to transmitting and receiving data.

25 Q. Now, what is the transceiver here?

1 A. The transceiver here is the entire product.

2 Q. And who designs this transceiver?

3 A. This is Exhibit 24. And, similarly, I've also opined on
4 Exhibit 13, 22, 28, and 29, and this transceiver was designed
5 by, I believe, CommScope.

6 Q. And what is a shared common circuitry in the BGW210?

7 A. It's shown in yellow. It's the portions related to
8 transmitting and receiving that are shared. They include DFE.
9 They include the analog front end, which does the transmitting
10 and receiving. They include the isolation transformer and
11 also the connecting circuitry such as the jack.

12 Q. Did you look at similar schematics for the other accused
13 products?

14 A. Yes. And I list them as Exhibit 13, 22, 28, and 29 for
15 example.

16 Q. And do those products also meet the definition of
17 transceiver?

18 A. Yes, they also satisfy this limitation.

19 Q. Now, what in the VDSL standard are you relying on for the
20 claimed bit stream?

21 A. I'm relying on something called SOC messages, which are
22 special operations channel messages.

23 Q. And what are some examples of SOC messages that are
24 transmitted by CommScope's products?

25 A. Yes. As described in Exhibit 34, the VDSL2 standard,

1 they are the RP medley class of messages shown in yellow, and
2 they include the R message 2, R-TPS-ACK, the R-PMS, and the
3 R-PMD.

4 MR. CHIPLUNKAR: Your Honor, at this time Professor
5 Madisetti will be discussing Broadcom confidential code. We
6 request the Court to seal the courtroom.

7 THE COURT: All right. Based on counsel's request
8 and to protect confidential information, I'll order the
9 courtroom sealed.

10 As a part thereof, I'll direct that all persons present
11 who are not subject to the protective order that's been
12 entered in this case should excuse themselves and remain
13 outside the courtroom until it's reopened and unsealed.

14 This will also seal this portion of the record or the
15 transcript.

16 (Courtroom sealed.)

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(Courtroom unsealed.)

THE COURT: Mr. Stevens, you may proceed with cross-examination when you're ready.

MR. STEVENS: Thank you, Your Honor.

CROSS EXAMINATION

BY MR. STEVENS:

Q. Good afternoon, Doctor Madisetti.

A. Good afternoon, sir.

Q. We've met a couple of times before, haven't we?

A. Yes.

Q. Okay. One of the things that I heard you say on your direct was that the patents that you looked at were adopted into the standard. Did I hear you right about that?

1 A. Yes.

2 Q. Okay. And remind me: When was the VDSL2 standard
3 adopted?

4 A. I don't remember the exact date.

5 MR. STEVENS: Let's pull up Exhibit 34, please, if
6 we can look at the cover of that document.

7 Q. (BY MR. STEVENS) Does this refresh your recollection,
8 sir?

9 A. Yes.

10 Q. And so when did the VDSL2 standard actually publish?

11 A. It would be 12 of 2011.

12 Q. Okay. So December of 2011. Do I have that right?

13 A. Yes.

14 Q. Okay.

15 MR. STEVENS: We can take that down.

16 Q. (BY MR. STEVENS) Now, the '008 Patent, which is Exhibit
17 4.

18 MR. STEVENS: If we could bring that up.

19 Q. (BY MR. STEVENS) When did the '008 Patent actually
20 issue?

21 A. It issued on January 3rd, 2012.

22 Q. Okay. So the '008 Patent issued after the standard was
23 adopted. Is that right, sir?

24 A. Yes.

25 Q. Okay.

1 A. It depends on the provisional that was in 2000, sir.

2 Q. The '008 Patent issued after the standard was adopted.
3 Correct?

4 A. The date, yes.

5 Q. Okay. So let's look at the other patent. It's Exhibit
6 6. This is the '835 Patent that you looked at. This issued
7 in June of 2013. Is that right, sir?

8 A. Yes.

9 Q. And so the '835 Patent also issued after the standard was
10 adopted and published at the ITU. Is that right?

11 A. Yes.

12 Q. Okay. Thank you.

13 Now, you agree with me, as we've heard throughout this
14 trial, sir -- let me withdraw the question.

15 It's true, sir, that the ITU doesn't look at patents and
16 determine whether there's a correspondence between patents and
17 standards. Is that right?

18 A. I cannot offer an opinion on that, counsel.

19 Q. Because you don't know?

20 A. No. Because I'm not sure what you're referring to.

21 Q. The ITU doesn't look at patents to determine whether
22 they're essential to any standard. Is that right?

23 A. At a high level, yes. The declarants describe patents as
24 being essential.

25 Q. Well, not at the ITU. Isn't it true, sir, that at the

1 ITU, you just say that we believe we have patents relevant to
2 a standard, and you don't identify any patents. Isn't that
3 how it happens at the ITU, sir?

4 A. As I said, counsel, I would have to look at some specific
5 documents. My understanding is that it's the declarants that
6 describe certain technology as being covered by the patents.

7 Q. Yes or no, sir: Do declarants at the ITU, do they ever
8 specify a patent number specifically?

9 A. I don't know.

10 Q. Okay. So let's look again at Exhibit 34.

11 MR. STEVENS: And if we could go to the fourth page
12 of that document, please, sir.

13 Q. (BY MR. STEVENS) And it says, intellectual property
14 rights, and I'd like to look at that first paragraph under
15 there and the second sentence.

16 MR. STEVENS: If we could get that highlighted.

17 Q. (BY MR. STEVENS) I just want to make sure I'm reading
18 this right, sir.

19 Am I correct that it says, "ITU takes no position
20 concerning the evidence, validity, or applicability of claimed
21 intellectual property rights, whether asserted by ITU members
22 or others outside of the recommendation development process."

23 Did I read that correct, sir?

24 A. Yes, you read that.

25 Q. Okay. So the ITU doesn't do anything to suggest that a

1 patent is or is not standard essential. Is that right?

2 A. Again, I don't have an opinion on that, counsel.

3 Q. I'm not asking for an opinion, sir. I'm asking for a
4 fact. You do understand that the ITU doesn't do anything to
5 look at a patent and say whether it's standard essential or
6 not. That's not the ITU's job. Is that right?

7 A. I don't know for sure, counsel.

8 Q. Okay.

9 MR. STEVENS: We can take that down. Thank you.

10 Q. (BY MR. STEVENS) Now, you didn't yourself actually
11 examine any of the CommScope accused products in this case.
12 Is that right?

13 A. I did look at the source code myself.

14 Q. Sir, did you examine the products?

15 A. The physical products?

16 Q. Yes, sir.

17 A. I did not.

18 Q. Did you run any testing yourself in this case, sir?

19 A. Not myself. I directed Doctor Cooklev to test for me.

20 Q. And that test happened somewhere outside the United
21 States. Is that right?

22 A. The testing occurred in the UK at the direction of myself
23 and Doctor Cooklev.

24 Q. Sir, yes or no, you weren't there in the UK for that
25 testing. Is that right?

1 A. No, I wasn't.

2 Q. Okay. And you didn't yourself run any simulations in
3 this case. Is that right?

4 A. I did not run myself. I requested Doctor Cooklev.

5 Q. Okay. So anything about testing or simulations that you
6 discussed during your direct testimony, that was Doctor
7 Cooklev, the last gentleman who testified. That was him who
8 did that. Right?

9 A. At my direction.

10 Q. Okay. And in the process of forming all of the opinions
11 that you gave related to infringement, you had never spoken
12 with Doctor Cooklev at all when you offered those opinions.
13 Is that correct?

14 A. I disagree. I spoke with him many times.

15 Q. Let me get this straight. Am I right that you did not
16 happen to talk to Doctor Cooklev in the course of preparing
17 your reports in this case? Is that true?

18 A. During the preparation of the report, yes.

19 Q. Okay. Thank you, sir.

20 Now, I'd like to discuss the '835 Patent for a moment, if
21 we can, sir. Okay?

22 A. Sure.

23 Q. Now, neither Aware nor Mr. Tzannes invented forward error
24 correction. True?

25 A. Yes.

1 Q. Neither Aware nor Mr. Tzannes invented interleaving. Is
2 that right?

3 A. General interleaving, yes.

4 Q. In fact, the '835 Patent itself tells us that it was a
5 standard practice for communication systems to use
6 interleaving in combination with forward error correction.
7 Correct?

8 A. Are you referring to a portion of the patent, sir?

9 Q. Sure. I'm asking you, does the patent tell us that it
10 was already known technology before the patent in a
11 telecommunications system to use interleaving in combination
12 with forward error correction?

13 A. Again, if you point me to the specific portion, I can
14 confirm that.

15 Q. We can look at column 1, lines 34 through 37.

16 A. One second, sir. Column 1, 34 --

17 Q. To 37.

18 A. Yes.

19 Q. Okay. That column tells us it was standard practice for
20 communication systems to use interleaving in combination with
21 forward error correction before Aware ever went to the PTO
22 with this application. Correct?

23 A. Yes. As per column 1, lines 34 to 37, where it talks
24 about correcting errors due to impulse noise.

25 Q. Okay. And neither Aware nor Mr. Tzannes invented an

1 inverted sync signal or a sync flag. Correct?

2 A. I don't have an opinion on that, counsel.

3 Q. Okay. Now, one of the analogies that you shared in your
4 report was that this patent is sort of like waving a flag. Is
5 that right?

6 A. Again, the patent is -- the claim defines the invention.

7 Q. Sir, isn't it true that in your report you drew an
8 analogy about a white flag at a NASCAR race?

9 A. Yes.

10 Q. Okay. Do you know whether's such thing as a checkered
11 flag at a NASCAR race?

12 A. I know there's a checkered flag, but I'm not sure what
13 it's used for.

14 Q. Do you know whether there's a green flag at a NASCAR
15 race?

16 A. Again, my knowledge is limited, counsel.

17 Q. Okay. Do you know if there's a yellow flag in a NASCAR
18 case?

19 A. I think there is. Again, I don't know the specific
20 reasons.

21 Q. Okay. So the NASCAR flag analogy that you reported in
22 your report, that was something that counsel put in your head.
23 Is that fair?

24 A. No. I was just using flag because it mentioned flag, not
25 to dive deeply into NASCAR.

1 Q. Okay. And NASCAR has been using flags since long before
2 this patent came around. Is that fair?

3 A. Different types of flags.

4 Q. Okay. Now, in your testimony you talked about a feature
5 called dynamic D. Did I hear that correctly, sir?

6 A. Yes.

7 Q. And you agree that dynamic D is an entirely optional
8 portion of the VDSL2 standard. Correct?

9 A. It is an optional portion, yes. It's an optional portion
10 of the standard, but it's still essential.

11 Q. Okay. Let's unpack that a bit. It's optional, which
12 means you don't have to do it. Correct?

13 A. Yes.

14 Q. All right.

15 A. You don't have to implement it. Yes.

16 Q. Right. So if I'm building a VDSL2 chip or if I'm
17 building a VDSL2 product, I don't have to build dynamic D into
18 it. Correct?

19 A. You don't have to unless you are required to.

20 Q. Okay. And if I'm a network operator putting one of these
21 into practice, I don't have to turn on dynamic D. Is that
22 correct?

23 A. Yes. You have a choice.

24 Q. Okay. Does AT&T use dynamic D in its network whatsoever?

25 A. I believe so, yes, because it requires the use of the

1 G.vector specification as per UberMatrix, and so, therefore,
2 it requires dynamic D.

3 Q. Okay. So it's your testimony that AT&T in the real world
4 uses dynamic D in its network. That's your testimony.
5 Correct?

6 A. Yes, based on evidence that I reviewed and also the
7 evidence that I've heard in the courtroom.

8 Q. Can you show me any evidence that you talked about during
9 your direct examination that shows that AT&T ever uses dynamic
10 D in its network?

11 A. Yes. UberMatrix, look at UberMatrix, line number 407,
12 you'll find that AT&T requires G993.5 conformance, which is
13 the G.vector specification that specifically requires dynamic
14 interleaver.

15 Q. So that's G.vector, sir. Let me ask you about VDSL2.
16 All right? For VDSL2, does AT&T use dynamic D? Yes or no.

17 A. Yes, because it's used in combination with G.vector.

18 THE COURT: Let me interrupt for a minute.

19 Counsel, you're perfectly entitled to ask any question
20 you want to ask. You're not entitled to constrain the witness
21 to a yes or no.

22 If the question calls for a yes or no and the witness is
23 non-responsive, then you raise that objection with me, but you
24 don't say, here's your question and these are the only ways
25 you can answer it.

1 Just ask your question, and if the answer is not
2 responsive to your question, I'll deal with it if you raise it
3 as an objection. All right?

4 MR. STEVENS: Thank you, Your Honor.

5 THE COURT: Let's proceed.

6 Q. (BY MR. STEVENS) So, again, I just want to make sure
7 that -- I'll withdraw that.

8 Putting aside G.vector, if we're just talking about
9 VDSL2, is it your testimony that AT&T actually uses that in
10 their network?

11 A. Yes.

12 Q. Okay. Thank you, sir.

13 Now, you talked about transceivers during your direct
14 testimony. Do I recall that?

15 A. Yes.

16 Q. All right. And the Broadcom chipsets have a transceiver
17 in them. Is that right?

18 A. The accused products have -- that include the Broadcom
19 chipset have a transceiver.

20 Q. Well, on the -- I'm asking you about the Broadcom chipset
21 itself. That includes the analog front ends that you spoke
22 of. Is that right?

23 A. Yes.

24 Q. Okay. And Broadcom itself when it has the data sheets on
25 these chips says that they include a transceiver. Correct?

1 A. Yes.

2 Q. Okay. So within that Broadcom chipset is a transceiver
3 with an analog front end that is there for sending and
4 receiving. Correct?

5 A. No. The transceiver -- there is one in the Broadcom
6 chipsets and there's also in the accused products.

7 Q. Okay. So let's look at Exhibit 15, please. On the third
8 paragraph, it says --

9 A. Hold on a second, sir.

10 Q. Take your time.

11 A. Okay.

12 Q. It says the BCM63146 is integrated multimode ADSL2+ VDSL2
13 transceiver and analog front end. Did I read that correctly,
14 sir?

15 A. Yes.

16 Q. And if we look at the top of the right column, the first
17 bullet point says that on this chipset includes an integrated
18 multimode ADSL 2, VDSL2 transceivers and analog front end. Is
19 that correct, sir?

20 A. Yes. You are reading from the data sheet.

21 Q. Of the Broadcom chipset. Is that correct?

22 A. Yes, sir.

23 Q. So everything that we see there is on the chipset. Is
24 that true, sir?

25 A. Everything on this data sheet is on the Broadcom chipset.

1 Q. Okay. Thank you.

2 MR. STEVENS: We can take that down.

3 Q. (BY MR. STEVENS) And during your direct testimony when
4 you referred to source code, you referred to Broadcom source
5 code. Is that right?

6 A. I referred to CommScope and Broadcom source code.

7 Q. Did you actually show any source code that's CommScope
8 source code as opposed to Broadcom's?

9 A. I didn't show any CommScope's source code during my
10 testimony today. I do refer to that in my report.

11 Q. Okay. So during your direct testimony today to the jury,
12 you only showed Broadcom source code. Is that correct?

13 A. Yes.

14 Q. Thank you.

15 So I'd like to talk about the '008 Patent. Is that all
16 right, sir?

17 A. Yes, sir.

18 Q. Now, neither Aware nor Mr. Tzannes invented the concept
19 of phase scrambling. Is that right?

20 A. I don't have an opinion on that, counsel.

21 Q. In your research, long before this patent, you were
22 dealing with phrase scrambling in telecommunication systems.
23 Is that right?

24 A. Not in this context.

25 Q. Sir, in telecommunications, was your research involving

1 phase scrambling? Is that something you did before this
2 patent?

3 A. I don't recall.

4 Q. Okay. And the concept of peak-to-average power ratio or
5 PAR, that was a known concept before Mr. Tzannes or Aware ever
6 went to the Patent Office. Is that right?

7 A. The definition of PAR was known.

8 Q. Okay. And pseudorandom number generators were known
9 before Aware or Mr. Tzannes went to the Patent Office. Is
10 that right?

11 A. Yes.

12 Q. Now, now you're aware for there to be infringement, each
13 and every limitation of the claim needs to be in the product.
14 Is that right?

15 A. Yes.

16 Q. If one thing is missing, that means there can't be
17 infringement. Correct?

18 A. Yes.

19 Q. All right. Now, if we talk about the claim of the '008
20 Patent that you --

21 MR. STEVENS: And let me withdraw that, if I can,
22 Your Honor.

23 Q. (BY MR. STEVENS) You had mentioned during your direct
24 testimony the claims of the patent, and I just want to make
25 sure that you are offering an opinion just as to one single

1 claim. Do I have that right, sir?

2 A. Yes. I understand we were limited to just one claim.

3 Q. Okay. And so you've not provided an infringement
4 analysis on anything but one single claim of the '008 Patent.
5 Is that right?

6 A. In this testimony today? Yes.

7 Q. Okay. And one of the aspects that's required by the '008
8 Patent is computing a phase shift for each carrier signal. Is
9 that right, sir?

10 A. The complete -- yes, it's a portion of a limitation
11 14[b].

12 Q. Okay. I'll read the whole thing just to -- just to make
13 sure that we all have it. Computing a phase shift for each
14 carrier signal based on the value associated with that carrier
15 signal. Did I hear that right, sir?

16 A. Yes.

17 Q. Okay. So, again, the claim requires computing a phase
18 shift for each carrier signal. Is that right, sir?

19 A. Yes, based on the value associated with that carrier
20 signal.

21 Q. Okay.

22 MR. STEVENS: Now, if we could bring up Exhibit 34
23 and look at table 12.70, please.

24 THE WITNESS: Okay.

25 MR. STEVENS: It's in section 12.3.6.2. There we

1 go.

2 Q. (BY MR. STEVENS) And this is the table that you
3 discussed with your counsel during your direct testimony. Is
4 that right?

5 A. Yes.

6 Q. Okay. And what we see here in this table is the angle of
7 rotation. That's going to be the phase shift. Is that right,
8 sir?

9 A. You're computing a phase shift.

10 Q. Sir, my question -- I withdraw that.

11 What we see here in the middle column is the angle of
12 rotation. Is that right, sir?

13 A. Yes. The middle column is titled Angle of Rotation.

14 Q. And that's how much we're going to rotate the phase.
15 That's the phase shift. Correct?

16 A. That's the angle of rotation.

17 Q. Okay. So just to put this in context, am I right that if
18 we start at 12 on a clock and we were to rotate it by π over
19 2, where would we end up on that clock?

20 A. What do you mean by clock, counsel?

21 Q. A clock, like that clock right over there on the wall?
22 If we start at noon with the hour hand pointing straight up,
23 we rotate that by π over 2, where would that leave us?

24 A. You would add 90 degrees, and you would be at the 6
25 number.

1 Q. If I start straight up at noon and I rotate by 90
2 degrees, where am I going to be on that clock?

3 A. You would be adding 90 degrees, and you would be at 6.

4 Q. Okay. So you think starting straight up and adding 90
5 degrees puts you straight down?

6 A. Oh, sorry. 90 degrees puts you at 3.

7 Q. Okay. All right.

8 A. Yeah, yeah.

9 Q. So if I start at noon, a pi over 2 rotation would put me
10 at 3 on that clock. Right?

11 A. By adding 90 would give you 3.

12 Q. All right. If I start at noon and I have the angle of
13 rotation at pi, then I'd be at 6:00 straight down. Right?

14 A. You would add 180 degrees, and you would be at 6.

15 Q. Okay. Now, the first angle of rotation here is 0. Is
16 that right?

17 A. Yes.

18 Q. So if I start at noon on that clock and I don't rotate at
19 all, where am I going to be?

20 A. You are rotating, but you are rotating by 0.

21 Q. Okay. So you believe a clock starts at noon and it stays
22 at noon, you believe that to be a rotation.

23 A. The way it is described in section 12.3.6.2, you are
24 computing the angle of rotation by adding a 0 or a 90 or a 180
25 or a 270. So I would call it as adding a 0.

1 Q. And, sir, any number where you add 0 to that number is
2 still that number. Is that right?

3 A. The value is still the same, but you have done the
4 addition. It doesn't change.

5 Q. Okay. So 9 plus 0 is 9. Is that right?

6 A. Yes, addition.

7 Q. 15 plus 0 is still 15. Is that right?

8 A. Yes.

9 Q. All right. And I want to look at a sentence, the middle
10 sentence right above the table there.

11 MR. STEVENS: If we could highlight that part that
12 starts the sub-carrier right in the middle there. There we
13 go. Thank you, sir.

14 Q. (BY MR. STEVENS) Now, Doctor Madisetti, just check me
15 and make sure I'm reading right. Does it state, quote, the
16 sub-carrier with index 0 DC shall not be rotated? Did I read
17 that correctly, sir?

18 A. Yes.

19 Q. And during your testimony, your direct testimony, I heard
20 you to say shall is an absolute requirement. Is that right?

21 A. Yes, in the context of standards, yes.

22 Q. Okay. So what this tells us is that the sub-carrier with
23 index 0 shall not be rotated. Is that what it says, sir?

24 A. Yes, that's what it says.

25 Q. Thank you.

1 MR. STEVENS: Your Honor, I pass the witness.

2 THE COURT: Is there redirect from the Plaintiff?

3 MR. CHIPLUNKAR: Yes, Your Honor, a few more
4 questions.

5 THE COURT: All right. Please proceed with redirect
6 whenever you're ready, Mr. Chiplunkar.

7 REDIRECT EXAMINATION

8 BY MR. CHIPLUNKAR:

9 Q. Professor Madisetti, counsel asked you some questions
10 regarding the dates of the '008 Patent.

11 A. Yes, counsel.

12 Q. And when was -- what is the provisional date of the '008
13 Patent?

14 A. I believe that it is dated -- in the first column it
15 shows line -- it shows that it's filed -- the provisional
16 application was filed on November 9th, 1999. Now it's
17 clearer.

18 Q. And did Mr. Marcos Tzannes disclose the inventions in the
19 provisional application?

20 A. Yes.

21 Q. And the date of the provisional application is before the
22 date of the VDSL2 standard. Correct?

23 A. Yes, more than 10 years before.

24 Q. So Mr. Marcos Tzannes came up with this idea that was
25 adopted in the VDSL2 standard 10 years before the VDSL2

1 standard?

2 A. That's right. More than 10 years.

3 MR. STEVENS: Objection; leading, Your Honor.

4 THE COURT: Avoid leading, counsel. I'll sustain
5 the question. I'll sustain the objection, rather.

6 Q. (BY MR. CHIPLUNKAR) When did Mr. Tzannes disclose the
7 invention --

8 A. In November 1999.

9 THE COURT: Okay. Doctor Madisetti, make sure the
10 attorney has finished the question before you answer, please.

11 THE WITNESS: I'm sorry, Your Honor.

12 THE COURT: That's all right.

13 Please continue.

14 Q. (BY MR. CHIPLUNKAR) When did Mr. Tzannes disclose the
15 invention that is in claim 14 of the '008 Patent?

16 A. On November 9th, 1999. Counsel, I can't hear you
17 clearly.

18 Q. Sorry.

19 A. Yeah.

20 Q. And when was the VDSL2 standard that counsel showed you
21 dated?

22 A. I believe it was dated December of 2011, which is more
23 than 10 years later.

24 Q. Counsel asked you some questions regarding the date of
25 the '835 Patent. Do you recall that?

1 A. Yes.

2 Q. And what is the provisional application filing date of
3 the '835 Patent?

4 A. It states here that it was filed on March 24th, 2004.

5 Q. And what is the date of the VDSL2 standard that he showed
6 you?

7 A. It was more than 10 years later. I believe December of
8 2011.

9 Q. Counsel asked you some questions regarding the numbering
10 of some carrier signals. Do you recall that?

11 A. Yes. He was referring to DC 0 as not being rotated at
12 all.

13 Q. What is the plurality of carrier signals that you're
14 relying on for your infringement opinions?

15 A. My theory of infringement does not rely on carrier DC
16 carrier 0. The plurality of carrier signals I rely upon are
17 1, 11, 21, and others shown in blue.

18 Q. So even if -- so if carrier 0 is not rotated, does that
19 change your infringement opinion?

20 A. It does not because I have shown a plurality that
21 satisfies the claim.

22 MR. CHIPLUNKAR: I have no more questions. Pass the
23 witness.

24 THE COURT: All right. Is there further
25 cross-examination?

1 MR. STEVENS: Yes, Your Honor.

2 THE COURT: All right. Let's proceed with
3 additional cross-examination.

4 RECROSS EXAMINATION

5 BY MR. STEVENS:

6 Q. On that very last point, Doctor Madisetti, again, when we
7 read the claim together, it requires calculating a phase shift
8 for each carrier. Is that correct, sir?

9 A. No, sir. It's each carrier of the plurality.

10 Q. Okay. So each carrier of the plurality we have to
11 compute a phase shift for. That's what the claim requires.
12 Right?

13 A. Yes, as stated in the claim.

14 Q. Okay. And then let's look again at what I had on the
15 screen, Exhibit 34 at that table. And what the standard tells
16 me, and I just want to confirm I am reading it right, sir, is
17 the sub-carrier with index 0 DC shall not be rotated. That's
18 what the standard says. Correct?

19 A. Yes.

20 Q. Okay.

21 MR. STEVENS: I pass the witness, Your Honor.

22 THE COURT: Is there additional direct?

23 MR. CHIPLUNKAR: No, Your Honor.

24 THE COURT: All right. Then you may step down,
25 Doctor Madisetti.

1 THE WITNESS: Thank you, Your Honor.

2 THE COURT: You're quite welcome.

3 Plaintiff, call your next witness.

4 MR. DAVIS: Your Honor, Plaintiffs call Dr. Peter
5 Heller to the stand.

6 THE COURT: All right. Doctor Heller, if you will
7 come forward and be sworn, please.

8 (Whereupon, the oath was administered by the Clerk.)

9 THE COURT: Please come around, sir, have a seat on
10 the witness stand.

11 Are there binders to distribute here, counsel?

12 MR. WILSON: No binders, Your Honor.

13 THE COURT: All right. Mr. Wilson, you may proceed
14 with direct examination.

15 MR. WILSON: Thank you, Your Honor.

16 PETER HELLER, Ph.D., SWORN,
17 having been duly sworn, testified under oath as follows:

18 DIRECT EXAMINATION

19 BY MR. WILSON:

20 Q. Could you please introduce yourself to the jury, sir?

21 A. Yes. My name is Peter Heller.

22 Q. And what topics are you going to be discussing today?

23 A. I'm here to talk about the size, area, of DSL chips and
24 specific functions on those chips.

25 Q. Did you prepare any materials to help the jury understand

1 your testimony today?

2 A. Yes, I did. I prepared a slide show.

3 MR. WILSON: Your Honor, could I publish the slide
4 show as a demonstrative in front of the jury?

5 THE COURT: Without objection, you may.

6 Q. (BY MR. WILSON) Doctor Heller, did you prepare slides
7 summarizing your qualifications?

8 A. Yes, and that's this slide here.

9 Q. Could you, please, tell us about your educational
10 background?

11 A. Sure. I got a Bachelor's in mathematics at University of
12 North Carolina and then went on to Princeton to get my
13 master's and Ph.D. in mathematics.

14 Q. Have you held any academic appointments?

15 A. Yes, I have. I -- after getting my doctorate at
16 Princeton, I worked as an instructor and a lecturer of math at
17 Massachusetts Institute of Technology, MIT. Later, I also
18 served as an adjunct faculty in electronics engineering at a
19 Northeastern in Boston.

20 Q. How many years of experience do you have, Doctor Heller,
21 in the field of DSL chip design?

22 A. I have over 20 years' experience in that area.

23 Q. Could you tell us about your employment background?

24 A. Sure. After teaching at MIT, I worked briefly at PTC and
25 then came to Aware where I worked for 19 years. I assembled a

1 team of a chip designers there which I led. I had
2 responsibility for all the chips that Aware built. We built
3 over 30 DSL chips.

4 I brought that team into Lantiq and subsequently brought
5 the team into Qualcomm where we worked on WiFi chips.

6 Q. Have you personally designed DSL chips?

7 A. Yes, I have. As I said, over 30 of them.

8 Q. Can you please give us a particular example of a DSL chip
9 you have designed?

10 A. Yeah, sure. One -- a good example would be the VINAX
11 chip. We designed that in 2005 as the VDSL2 standard was
12 being finalized. It was the world's first fully compliant
13 VDSL2 chip. It was fabricated in 2006.

14 We later -- I later designed a number of chips for both
15 Aware, Infineon, Lantiq, and some other Aware customers.

16 Q. What do you currently do for a job, Doctor Heller?

17 A. Well, after 25 years in the electronics industry, I
18 decided to switch gears and pursue a long-held passion. So I
19 went back to architecture school, and now I work as an
20 architect for a firm in Boston, DiMella Shaffer, where I
21 design senior living communities.

22 MR. WILSON: Your Honor, at this time we would like
23 to offer Doctor Heller as an expert in the field of
24 semiconductor microchip design, including DSL microchips?

25 THE COURT: Is there objection?

1 MR. BARTON: No objection, Your Honor.

2 THE COURT: Without objection then, the Court will
3 recognize this witness as an expert in those designated
4 fields.

5 Please continue, counsel.

6 MR. WILSON: Thank you, Your Honor.

7 Q. (BY MR. WILSON) What were you asked to do in this case,
8 Doctor Heller?

9 A. I was asked to assess actually how much space on a VDSL2
10 microchip is taken up by the interleaver and retransmission
11 memory.

12 Q. How did you reach an answer to this question?

13 A. Well, there really were two parts to it. The first one
14 was going to the standard at G.993.2 that we keep talking
15 about. The standard describes different functions that need
16 to be performed as part of the VDSL2, and it prescribes
17 specific ranges of parameters.

18 If you follow through the consequences of those parameter
19 choices, four things like codeword size and interleave depth,
20 you very quickly arrive at a number which is the minimum
21 amount of memory you need in order to support standard
22 compliant interleaving and retransmission.

23 Q. After conducting your analysis, what conclusion did you
24 reach for this question?

25 A. I concluded that 10 to 15 percent of the area of the

1 VDSL2 functionality in the chip is required for the
2 interleaver and retransmission memory.

3 Q. Stepping back, Doctor Heller, could you please tell us
4 what a microchip is actually made out of?

5 A. Yeah. And this is going to help just explain some of the
6 terms we are talking about.

7 So chips are made out of -- microchips are made out of
8 silicon, which is a mineral. It's like iron, and you see some
9 crystals of silicon on the left. Those crystals are sliced
10 into thin disks which are called wafers.

11 And then in the middle photo, you see what happens with
12 the wafer. You see it's being held by a technician in a chip
13 fabrication plant in that photo. The wafer is, you know, cut
14 into all these die or scored to identify all these rectangular
15 regions and then processed with light, chemicals, and electric
16 wires are deposited to turn each of those little rectangles
17 into a die. And that's the photo on the right.

18 So we've actually transformed the silicon element into
19 transistors and wired them together at a microscopic level and
20 made many of them on a single wafer like that. And then it's
21 diced up, and so the individual squares are called die. And
22 that's a bare silicon die.

23 But then, by itself, it's very vulnerable. So you have
24 to put it in a plastic package, and you get the image in the
25 bottom right where you encase that die in a plastic package

1 and brought out big thick metal wires to connect it to the
2 other devices on the circuit board.

3 Q. What aspects of a microchip have the highest costs
4 associated with them?

5 A. So it's that bare die that's actually the most -- by far
6 the most expensive part of the chip. Here is some data from a
7 professor at UC-Davis which aligns well with my own experience
8 of over 20 years of building chips, that out of the total
9 manufacturing cost for building a chip, anywhere from, say, 65
10 to 80 percent of the cost is the cost of the bare die.

11 The other components of the cost are that plastic
12 package, assembling it, and testing it.

13 Q. For your analysis, Doctor Heller, what was the particular
14 DSL chip you looked at?

15 A. So I looked at one of the chips we designed. This is the
16 Lantiq VRX 288. We designed this chip in around 2008, 2009.
17 It's fully compliant with VDSL2 and G.INP. It was offered in
18 the marketplace from 2009 through 2012. And it also supports
19 the 30A profile, the most demanding profile in the VDSL2
20 standard.

21 Q. For this particular DSL chip, how is the DSL portion
22 designed?

23 A. Let's go to the next slide.

24 And this is a block diagram that shows as you take these
25 DSL algorithms satisfied in the standard and try to turn them

1 into an electronic device, you really partition it into a
2 processor, that's the programmable part that the C code, the
3 source code, is compiled down to run on. And on the bottom,
4 you have all these hardware accelerators, and they kind of do
5 the heavy lifting. They are very specific. They each do one
6 thing really well.

7 Q. And for your analysis, Doctor Heller, did you concentrate
8 on one part of the accelerator in particular?

9 A. Yeah, I did. I looked at the interleaver retransmission
10 hardware accelerator.

11 Q. And looking at the hardware, the interleaver
12 retransmission hardware accelerator, what is this made out of?

13 A. Yeah. So this one, it's mostly memory. It's actually
14 like no more than five percent logic. I mean, every
15 accelerator is a mixture of logic--that's 'and' 'and/or' gates
16 that actually do computations, do things like add numbers--and
17 memory that hold data like a chalkboard would.

18 And so every one of these accelerators is a mixture of
19 logic and memory. Some of them have a lot of logic like the
20 type of main filtering block. But the interleaver
21 retransmission, it's almost all memory. It's 95 percent
22 memory because mostly it's just holding data and then
23 shuffling it around.

24 Q. How is memory in a microchip measured?

25 A. So we measure memory in bits. Right? A bit is a 1 or a

1 0. Then if you have 8 bits, that's a byte. If you have a
2 thousand bites, that's a kilobyte. If you have million bytes,
3 that's a megabyte, which in megabytes and gigabytes, you know
4 that from buying a smart phone. So it's really how we just
5 measure memory in chips in terms of bits and bytes.

6 THE COURT: Could you slow down just a little bit
7 please, Doctor Heller?

8 THE WITNESS: Yes, sir.

9 THE COURT: Thank you.

10 Go ahead, counsel.

11 MR. WILSON: Thank you, Your Honor.

12 Q. (BY MR. WILSON) Memory on a microchip, how does it
13 actually take up physical space on the microchip surface?

14 A. So every bit of memory is made up of -- is held by a
15 group of several transistors, and then bits are independent.
16 So the more bits of memory you have, the more transistors you
17 have. It scales linearly.

18 Q. In the interleaver and retransmission hardware
19 accelerator, does the interleaver functionality and
20 retransmission functionality use separate memories or
21 different memories?

22 A. Oh, we use a shared memory. We would use -- we would
23 have several memory blocks that would function as a pool that
24 could be then assigned, allocated, to interleaving or
25 retransmission.

1 Q. And you personally have designed DSL chips that have the
2 shared memory functionality?

3 A. Absolutely. That VINAX chip I mentioned back at the
4 introduction from 2005, that had shared memory, and every
5 subsequent DSL chip we built after that had shared memory.

6 Q. Why did you design DSL chips with shared memory?

7 A. Because it's more efficient. It saves space. Rather
8 than have kind of separate blocks of memory for each different
9 function from the maximum you might need for each one, by
10 combining them together you can actually use the memory where
11 you need it and you don't have as much extra lying around.
12 And, therefore, you make a smaller, better chip.

13 Q. Doctor Heller, after considering this particular part of
14 this particular chip, what is your conclusion about how many
15 bytes are required for interleaver and retransmission memory?

16 A. Yes. So from the, you know, the careful reading of the
17 ITU standard, 65,536 bytes are the minimum required memory for
18 interleaving and retransmission to support VDSL2 and G.INP.

19 Q. And what percent of the area for the VDSL2 functionality
20 of a DSL chip is taken up by this memory?

21 A. Yeah. Those 65,536 bytes, so if we're building a chip
22 with minimal amount of memory required, that's 10 to 15
23 percent of the area of the VDSL2 part of the chip.

24 Q. How do you know that that percent is the correct one?

25 A. Because that was my job. I was responsible for the area

1 of our devices. I was being held to that number by my
2 management by organization for many years, so I had to know
3 these things.

4 Q. Thank you, Doctor Heller.

5 MR. WILSON: Pass the witness, Your Honor.

6 THE COURT: Cross-examination by the Defendants?

7 MR. BARTON: Yes, Your Honor.

8 THE COURT: All right. Proceed when you're ready,
9 Mr. Barton.

10 MR. BARTON: Thank you, Your Honor.

11 CROSS EXAMINATION

12 BY MR. BARTON:

13 Q. Good afternoon, Doctor Heller.

14 A. Good afternoon.

15 Q. We've not met before, have we?

16 A. No.

17 Q. Okay. Now, did I hear correctly during your direct
18 testimony that you were at Aware for 19 years?

19 A. Yes, that's correct.

20 Q. What was the -- the rough window of time you were there?

21 A. Oh, it started December 17th, 1990, and it ended in
22 November of 2009.

23 Q. Okay. And do I understand it correctly that Aware is a
24 company that Mr. Michael Tzannes founded?

25 A. He did not found it actually. I joined it before he did.

1 Howard Reznikov founded it. Michael joined shortly after I
2 did.

3 Q. Okay. And then Mr. Marcos Tzannes worked there as well.
4 Right?

5 A. Yes, he did.

6 Q. So I'm assuming you're pretty familiar with him?

7 A. I am familiar with him, yes.

8 Q. Fair to say you are good friends?

9 A. I'm friendly acquaintances with them.

10 Q. Okay?

11 A. We worked together for many years in a positive way.

12 Q. Okay. Now, if I understood correctly, you were
13 responsible for building and leading Aware's chip design team.
14 Right?

15 A. Yes.

16 Q. And during that time, my understanding is that your team,
17 the team you led, was first to market with a number of ITU
18 standard compliant chips. Is that right?

19 A. Yes, that's our belief.

20 Q. Was Aware actually making the chips or were they
21 designing the chips for somebody else to make?

22 A. Good question. Both. We -- some of the -- in all cases,
23 we were designing chips for others to make. In some cases,
24 others undertook the fabrication of the chips and selling of
25 them. And so we would often fabricate our own designs as part

1 of -- for example, we did that for that our first VDSL2 plus
2 compliant chip. And one of our customers took that exact GDS2
3 and brought it to market. That GDS2 is like the final image
4 that you map onto the wafer to make the chip.

5 So we -- we were not in the chip business ourselves, but
6 we produced the final level of detail description of a chip
7 for production for some of our customers.

8 Q. And the chips that you would design at Aware would comply
9 with the ADSL2, VDSL2, and G.INP standards. Right?

10 A. Yes.

11 Q. And what that means as a practical matter is that the
12 functionality of those standards was in the chips. Right?

13 A. Yes.

14 Q. Is it fair to say that your testimony here for the jury
15 is about the chips? Right?

16 A. Yes. I am here to speak about the chips.

17 Q. Okay. And one of the things you testified about was
18 shared memory. Right?

19 A. Yes.

20 Q. And if I understand correctly, what you just told us was
21 that that shared memory was on the chips that your team
22 designed. Right?

23 A. Yes.

24 Q. Now, eventually you left Aware and went to a company
25 called -- is it Lantiq?

1 A. However you want to say it.

2 Q. How did you say it?

3 A. I said it Lantiq.

4 Q. Okay. And when you left to go to Lantiq, that was in
5 connection with the sale of Aware's chip design business.
6 Right?

7 A. Yes.

8 Q. And when that happened, when you went from Aware to
9 Lantiq, you understand that Lantiq received a license to
10 Aware's DSL patents. Right?

11 A. I have a vague understanding of that, yeah.

12 Q. Fair enough. But you knew that when Lantiq made a chip,
13 that it can make those chips without fear of a lawsuit from
14 Aware. Is that fair?

15 A. Yes.

16 Q. And isn't it true as well that Lantiq knew that its
17 customers, the people that Lantiq sold its chips to, could buy
18 Lantiq's chips and put them in their products without fear of
19 being sued by Aware on DSL patents. Right?

20 A. That is not an area I have knowledge of.

21 Q. So you just don't know? Is that fair?

22 A. Yeah. I don't know.

23 MR. BARTON: Pass the witness, Your Honor.

24 THE COURT: Is there further direct?

25 MR. WILSON: No further direct, Your Honor.

1 THE COURT: All right. You may step down, Doctor
2 Heller.

3 THE WITNESS: Thank you very much.

4 THE COURT: You're welcome.

5 Plaintiff, do I understand you have a deposition witness
6 to offer at this time?

7 MR. DAVIS: That's correct, Your Honor.

8 THE COURT: All right. Proceed with your witness by
9 deposition.

10 MR. DAVIS: Your Honor, Plaintiff calls Mr. Jim
11 Shead from CommScope by deposition. The time allotments are
12 15 minutes for the Plaintiff and 5 minutes for the Defendant.

13 THE COURT: Proceed with this witness by deposition.

14 MR. DAVIS: Thank you, Your Honor.

15 THE COURT: Are we having a technical problem with
16 the audio?

17 MR. DAVIS: We are, Your Honor.

18 THE COURT: All right, then. Let's do this so we
19 don't waste any time.

20 Ladies and gentlemen, I was planning to recess after this
21 short deposition. We'll go ahead and recess now, ladies and
22 gentlemen, and hopefully during the interim this question or
23 issue can be worked out.

24 Members of the jury, if you'll simply close your
25 notebooks and leave them in your chase, please. If you'll

1 follow all my instructions, including not to discuss the case
2 with each other, we will be back here shortly and hopefully
3 continue with the deposition witness.

4 The jury's excused for recess at this time.

5 (Whereupon, the jury left the courtroom.)

6 THE COURT: Counsel, I have a request, and that is
7 if you will speak with your support staff behind the bar,
8 there have been instances today where people have entered and
9 left the courtroom and they've done so rather noisily. And
10 when the mechanism on the back door makes a sound, there are
11 at least two or three members of the jury who turn every time
12 to see who is coming and who is going. That door
13 will open and close quietly. I've done it myself. You need
14 to insist that staff opens and closes it and enters and leaves
15 as quietly and discreetly as possible not to distract the
16 jury. All right?

17 MR. DAVIS: Yes, Your Honor.

18 MR. DACUS: Understood.

19 THE COURT: We'll make this a short recess. The
20 Court stands in recess.

21 (Brief recess.)

22 THE COURT: Be seated, please.

23 I understand we're ready to proceed with the deposition
24 witness?

25 MR. STEVENS: May I raise a quick issue, Your Honor?

1 THE COURT: I guess you may.

2 MR. STEVENS: I have been informed that the next
3 live fact witness that Plaintiff intends to call was in the
4 courtroom for portions of testimony before he testifies which
5 I believe violates the Rule. We'd ask the Court's with the
6 Court's blessing to voir dire the witness before he takes the
7 stand to see if the Rule has been violated.

8 THE COURT: And who specifically are you talking
9 about, Mr. Stevens?

10 MR. STEVENS: Michael Tzannes.

11 THE COURT: Mr. Davis, do you have anything to say
12 on this?

13 MR. DAVIS: Your Honor, I've looked into the matter
14 and in fact Mr. Tzannes did come in. I've been told that he
15 came in for the last minute, and it was an inadvertent. But
16 he did come in for the last minute of Mr. Heller's testimony.

17 THE COURT: All right. Well, obviously he needs to
18 be voir dired outside the presence of the jury. The jury's
19 out of the room. I understand that there's going to be a
20 deposition played in between, but I see no reason why you
21 can't take him on voir dire now.

22 MR. STEVENS: Thank you, Your Honor. Happy to do
23 so.

24 THE COURT: Mr. Tzannes, where are you in the
25 courtroom? Or are you outside of the courtroom now?

1 MR. DAVIS: He's outside the courtroom right now,
2 Your Honor.

3 THE COURT: Why don't you go get him, Mr. Davis.

4 MR. DAVIS: Yes, Your Honor.

5 THE COURT: I assume this will be brief, Mr.
6 Stevens?

7 MR. STEVENS: I'm sorry, Your Honor?

8 THE COURT: I assume this will be brief?

9 MR. STEVENS: Oh, very brief.

10 THE COURT: Mr. Tzannes, please come forward. I'm
11 going to ask you to be sworn as our Courtroom Deputy.

12 (Whereupon, the oath was administered by the Clerk.)

13 THE COURT: All right. Why don't you come around,
14 have a seat on the witness stand very briefly. There are some
15 questions that will be asked about your presence in the
16 courtroom before you were called to testify. This is not when
17 your ordinary testimony will be given. We'll do that later.

18 THE WITNESS: Okay. Thank you, Your Honor.

19 THE COURT: Mr. Stevens, you may proceed.

20 MICHAEL ANDREW TZANNES, SWORN,
21 having been duly sworn, testified under oath as follows:

22 VOIR DIRE EXAMINATION

23 BY MR. STEVENS:

24 Q. Mr. Tzannes, it's true, is it not, that you walked into
25 the courtroom with Mr. Fink during Mr. Heller's testimony? Is

1 that right?

2 A. It is true.

3 Q. And you sat in one of the back rows over on the left
4 side. Is that right?

5 A. Right side as we're looking out, but yes.

6 Q. Thank you. And you sat there for a bit. Mr. Fink moved
7 up to the front of the room. Is that right?

8 A. Correct.

9 Q. And then Mr. Fink moved to the back of the room a couple
10 of minutes later. Is that right?

11 A. Yes, and told me to leave.

12 Q. And then you excused yourself for a few minutes. Right?

13 A. For the rest of the time, yes.

14 Q. And did you not come back in before Mr. Heller was
15 completed?

16 A. No, I did not, sir.

17 Q. So your testimony is that you were not in this room for
18 the last minute or two -- in addition to being earlier in the
19 room, you were not in the room for the last minute or two of
20 Mr. Heller's testimony?

21 A. I was not, sir.

22 Q. Okay. Has anybody shown you any transcripts of anything
23 that's happened in this courtroom so far in this case?

24 A. No, sir.

25 Q. Have you talked to your brother, Marcos Tzannes,

1 before -- at any point in time since the trial has started?

2 A. I certainly have talked to my brother since the trial has
3 started.

4 MR. DAVIS: Your Honor --

5 Q. (BY MR. STEVENS) Did you talk to your brother about --

6 THE COURT: Go ahead.

7 Q. (BY MR. STEVENS) Did you talk to your brother about the
8 contents of his testimony?

9 A. I did not.

10 Q. Your brother didn't ask -- didn't tell you any questions
11 he was asked on the stand or the subject matter of his
12 testimony at all?

13 A. No, he did not.

14 Q. Okay.

15 MR. STEVENS: Thank you, Your Honor.

16 THE COURT: All right. Does Defendant have any
17 objection to the testimony of Mr. Tzannes in light of that
18 voir dire?

19 MR. STEVENS: I do, Your Honor. He was in the room
20 for Mr. Heller's testimony.

21 THE COURT: It appears that you have established he
22 was in the room for some very small portion of Doctor Heller's
23 testimony. There's been no establishment that he heard it,
24 understood it, considered it, internalized it. For all I
25 know, he may have been playing tic-tac-toe on his cell phone.

1 So there's been nothing to establish facts that would
2 disqualify him or limit his ability to testify as a fact
3 witness.

4 You had your opportunity to voir dire, and the Court will
5 consider that any objection to Mr. Tzannes' testimony, in
6 light of the voir dire that's been freely given, is overruled.

7 MR. STEVENS: Understood, Your Honor.

8 THE COURT: All right. Now you may step down, Mr.
9 Tzannes --

10 THE WITNESS: Thank you, Your Honor.

11 THE COURT: -- and you may leave the room until you
12 are called to testify.

13 The Court finds there has been a technical violation of
14 the Rule, but there's been no establishment of a substantive
15 violation that would impede the witness' ability.

16 All right. Mr. Davis, are you prepared to go forward
17 with your witness by deposition?

18 MR. DAVIS: We are, Your Honor.

19 THE COURT: All right. I just want to note one
20 thing. I'm going to charge that time to the Defendant. I
21 also am going to advise counsel that there have been repeated
22 problems with the overnight meet-and-confer process, as I have
23 spoken with you at length about in chambers, including among
24 other things the failure to advise the Court with any
25 specificity as to objections, the failure of the parties to

1 attach disputed demonstratives or other documents, the
2 parties' failure to specify or attach portions of disputed
3 depositions for presentation to the jury, vague and imprecise
4 objections such as this calls for testimony beyond the
5 expert's testimony -- excuse me, beyond the expert's reports
6 when the particular expert would have filed multiple reports
7 of thousands of pages and the parties apparently have expected
8 the Court to comb through all those documents to see whether
9 there was or wasn't any support in the reports of the expert
10 for the questions asked.

11 These kind of ongoing failures on the parts of the party
12 which have been clearly delineated to the parties by the Court
13 have caused the Court to waste considerable time. Over the
14 lunch hour today, I expended at least 20 minutes with the
15 parties going over deposition designation and
16 counterdesignation disputes that could have and would have
17 been resolved earlier and without the use of that time, had
18 they complied with the Court's rules and instructions.

19 Therefore, I am deducting 20 minutes of trial time, 10
20 minutes from each side, to make up for the very late start
21 after lunch. You recall I told the jury I knew how to read a
22 clock, but there were things that arose that caused me to be
23 later than starting back from what I estimated for them.

24 And if the parties can't comply with the Court's pretrial
25 directives on how to submit overnight disputes for prompt and

1 reasonable resolution by the Court, I will continue to take
2 whatever actions necessary. Hopefully, a very minor 10-minute
3 per side charge will send a message to you that I'm serious
4 about the repeated instructions I've been giving you in
5 chambers.

6 All right. With that explanation, let's bring in the
7 jury.

8 (Whereupon, the jury entered the courtroom.)

9 THE COURT: Please be seated, ladies and gentlemen.

10 Now, Mr. Davis, are you prepared to present your
11 deposition witness?

12 MR. DAVIS: We are, Your Honor.

13 THE COURT: Please call your witness and identify
14 them for the record.

15 MR. DAVIS: Your Honor, Plaintiffs call Mr. Jim
16 Shead by deposition. The time is 4 minutes and 48 seconds for
17 the Plaintiff and 2 minutes and 12 seconds for the Defendant.

18 THE COURT: All right. Proceed with this witness by
19 deposition, please.

20 MR. DAVIS: Yes, Your Honor.

21 JAMES DANIEL SHEAD, BY SWORN DEPOSITION,

22 Q. What is your full name, sir?

23 A. James Daniel Shead, but I go by Jim.

24 Q. And, Mr. Shead, where do you live?

25 A. I live in Austin, Texas.

1 Q. What company do you work for, Mr. Shead?

2 A. I work for a company called CommScope Technologies.

3 Q. What is your job title at CommScope now?

4 A. Senior corporate counsel for litigation.

5 Q. And what did you do to prepare for your testimony on
6 CommScope's behalf today?

7 A. So in addition to my own knowledge, I met with my
8 attorneys, plural--attorneys plural.

9 Q. Just to be clear, Mr. Shead, did you call anybody other
10 than your attorneys to ask them any questions to prepare for
11 your testimony today?

12 A. No.

13 Q. Do you see the topic here: For each alleged acceptable
14 alternative to the accused products, the identity of any
15 patents that CommScope believes or have stated or represented
16 to others, whether externally or internally, are practiced by
17 each said acceptable alternative.

18 Do you see that?

19 A. That's what the topic says, yes.

20 Q. So are there any patents that CommScope is aware of
21 responsive to this topic?

22 A. My understanding is that there's not any alleged
23 acceptable alternatives.

24 Q. And for this topic here, what efforts has CommScope
25 undertaken to identify the patents and/or patent claims that

1 are essential to the practice of any of the DSL standards
2 related to this case?

3 A. I mean, I'm not aware of any efforts. I understand -- I
4 think TQ Delta's expert did this analysis. I'm unaware of any
5 efforts initiated by CommScope.

6 Q. Does CommScope contend there are any patents or patent
7 applications that it has that cover all or part of the accused
8 functionality within the accused products?

9 A. I'm not aware of such a contention.

10 Q. Do you see here on the second line where it says, TQ
11 Delta has not made any offers on FRAND terms?

12 A. That's correct.

13 Q. What is the basis of CommScope's position there?

14 A. Of the rates that they have offered, they do not strike
15 us as FRAND terms.

16 Q. And why is that, Mr. Shead?

17 A. Well, as disclosed to Ms. Divine and Mr. Bernstein, TQ
18 Delta's rates, totaling over two dollars per box in some
19 instance, would take up approximately half of the profit for
20 some of the boxes, given that some of the features are
21 optional, some of the features are not standard essential, and
22 some of the features are not actually used by our customers.
23 Taking half of the profit for an entire box does not strike us
24 as fair and reasonable.

25 Q. Mr. Shead, so my understanding of what you're saying is

1 that the -- that CommScope's position is that the offer is not
2 a FRAND offer because the rates are too high. Is that
3 correct?

4 A. The rates that they are offering are -- are out of
5 proportion with the technology contained, as we understand it,
6 with respect to our profit margin on this technology.

7 Q. And come back around to it, they weren't FRAND because
8 CommScope considers those rates to be too high proportionally
9 to its profit on the boxes. Is that correct?

10 A. So in some cases it's -- it's half of the profit that we
11 make on the box. The product -- the boxes may be subject to
12 other patent pools, and spending half of the profit for a
13 particular box is not FRAND.

14 Q. Does CommScope have any contention, knowledge, or belief
15 regarding what constitutes a reasonable, non-discriminatory
16 licensing term under applicable ITU patent policies?

17 A. I believe that will be the subject of expert testimony.
18 I don't know as I sit here.

19 Q. Prior to this suit, did CommScope ever make a
20 determination that the -- or form a belief that the rates that
21 were offered by Delta were not RAND or FRAND rates under
22 applicable ITU patent policies?

23 A. I don't know.

24 Q. So they may have been RAND or FRAND rates under
25 applicable ITU patent policy, CommScope just doesn't know?

1 A. I don't know. I imagine our expert will opine on that at
2 length.

3 Q. And does CommScope have any licensing policies and
4 practices related to the patent rights of others?

5 A. Generally, everything is just a case-by-case basis.

6 Q. And what do you mean by everything is just a case-by-case
7 basis, Mr. Shead?

8 A. There is no official policy. Every matter is examined on
9 its own merits.

10 Q. Mr. Shead, is there any written patent-licensing policy
11 at CommScope?

12 A. No.

13 Q. Mr. Shead, what policies, procedures, or approaches, if
14 any, does CommScope have related to valuing technology,
15 including patented technology?

16 A. So no written policy. It's a case-by-case evaluation.

17 Q. What is CommScope's understanding of DSL industry
18 licensing practices?

19 A. I don't believe CommScope has an understanding of DSL
20 industry licensing practices, although this may be the subject
21 of expert report.

22 Q. Does CommScope have any understanding of DSL industry
23 licensing practices?

24 A. I'm unaware of any, although this may be the subject of
25 expert testimony.

1 Q. And what does CommScope do to monitor the ITU-T TSB
2 patent database?

3 A. Unaware of any efforts by CommScope.

4 Q. And does CommScope ever review the ITU-T TSB patent
5 database?

6 A. I'm unaware of any efforts to review that database.

7 MR. DAVIS: This concludes the deposition, Your
8 Honor.

9 THE COURT: All right. Call your next witness.

10 MR. DAVIS: Plaintiffs call Dr. Peter Heller. I'm
11 sorry. Excuse me, Your Honor. Plaintiffs call Dr. Michael
12 Tzannes to the stand.

13 THE COURT: All right. If you'll bring him in from
14 outside the courtroom, we'll proceed.

15 Mr. Fink, you may go to the podium.

16 MR. FINK: Thank you, Your Honor.

17 THE COURT: If you'll come forward, please, Mr.
18 Tzannes. I'm going to ask you to be sworn again, please. I
19 want the jury to see you take the oath.

20 THE WITNESS: Very good.

21 (Whereupon, the oath was administered by the Clerk.)

22 THE COURT: All right. Now if you'll come around
23 and have a seat on the witness stand, please, sir.

24 All right, Mr. Fink. You may proceed with direct
25 examination.

1 MR. FINK: Thank you, Your Honor.

2 MICHAEL ANDREW TZANNES, SWORN,

3 having been duly sworn, testified under oath as follows:

4 DIRECT EXAMINATION

5 BY MR. FINK:

6 Q. Would you please state your name, sir?

7 A. Michael Andrew Tzannes.

8 Q. And, Mr. Tzannes, where do you live?

9 A. I live in Boston, Massachusetts.

10 Q. Briefly, would you summarize your education for us,
11 please, sir?

12 A. I have an undergraduate, a master's, and a Ph.D. in
13 electrical engineering with a focus on communication systems.

14 Q. And, Mr. Tzannes, are you familiar with the company Aware
15 that sold its patents to TQ Delta?

16 A. Yes, I am.

17 Q. How are you familiar with Aware?

18 A. I was at Aware for 22 years, and was CEO of Aware from
19 1998 until 2010, and then was executive chairman until late
20 2011, and then ran a group we called Patent Management
21 Operations until I left in 2012.

22 Q. So you were in charge of Patent Management Operations at
23 the company that sold its patents to TQ Delta?

24 A. Yes, I was.

25 Q. Doctor Tzannes, are you familiar with Aware's agreements

1 to license patents from the late 1990s to 2012?

2 A. I am very familiar with those, yes.

3 Q. And how are you familiar, Doctor Tzannes?

4 A. Well, I was CEO most of the time. And before I was CEO,
5 I started the licensing group at the licensing business at
6 Aware. So I either personally negotiated and signed those
7 agreements, or after I became CEO, people who worked for me
8 signed those agreements.

9 Q. And what was Aware's business, Doctor Tzannes?

10 A. We were a licensing company. So we would design and
11 develop technology and create licensable products from that
12 technology.

13 Q. And, Doctor Tzannes, what type of technology did Aware
14 develop?

15 A. Well, there had been an advancement in mathematics in the
16 early '90s called wavelets. And we were looking to apply
17 wavelets to a number of areas, and we ended up looking into
18 communications. I joined, after the Ph.D., to look at
19 applying wavelets to communication systems, and we focused on
20 DSL technology, but we also did other things like wireless
21 communications.

22 Q. And, Doctor Tzannes, did Aware manufacture any products?

23 A. We did not.

24 Q. And, Doctor Tzannes, what have you done since leaving
25 Aware in 2012?

1 A. I did some individual investing. I joined the board,
2 mainly of small companies. I started a company about nine
3 years ago that we sold to Facebook last year.

4 Q. And, Doctor Tzannes, how would you respond to somebody
5 who says that a technology company that doesn't manufacture
6 products is not a real company?

7 A. I wouldn't agree with that. I think it's -- it's sort of
8 nonsense. There are a lot of companies, technology companies,
9 that don't manufacture their own products. I can think of
10 many examples.

11 Apple makes phones. We're all familiar with those.
12 Apple is certainly a real company, but they don't actually
13 manufacture their own phones. They sell them, they put their
14 name on them, but they don't manufacture them.

15 Q. And, Doctor Tzannes, what types of companies wanted to
16 license Aware's DSL technology while you were CEO?

17 A. One example was Siemens, a company called Siemens.

18 Q. And what did Siemens want from Aware?

19 A. A semiconductor device, a chip, a piece of silicon that
20 would take our DSL technology and allow them to make a chip
21 that they could sell to DSL device manufacturers.

22 Q. And what year did Siemens approach Aware?

23 A. 1997, 1998.

24 Q. And did Aware enter into a contract with Siemens?

25 A. We did, indeed.

1 Q. Was DSL high speed internet even available in 1998?

2 A. No. As a matter of fact, it wasn't yet a market that was
3 known to consumers.

4 Q. If there was not yet a high speed DSL market, what is
5 your understanding of why Siemens wanted Aware's technology?

6 A. Well, there was -- there was a lot of anticipation that
7 there was going to be a big market for this. Phone companies
8 were looking for new ways to get money from their subscribers
9 instead of just plain old telephone service, and DSL looked
10 very promising as a way for them to offer data service,
11 broadband. And Siemens was interested in building chips to
12 address that opportunity.

13 Q. And, Doctor Tzannes, what type of contract did Aware have
14 with Siemens?

15 A. We executed a licensing and development agreement which
16 is often called a joint development agreement.

17 Q. And what is a joint development agreement, Doctor
18 Tzannes?

19 A. A joint development agreement is something where we
20 provide technology to our customer, but we also put a group of
21 our engineering team and their engineering team together to
22 work together to develop a product, in this case a chip for
23 DSL devices. And that's what our joint development agreement
24 with Siemens was focused on.

25 Q. And what did Aware get from the Siemens relationship?

1 A. I can think of five distinct things that -- that we got
2 from that Siemens relationship.

3 Q. And what was the first thing, Doctor Tzannes?

4 A. The first thing was that at that time the market was
5 non-existent, and they effectively created a chip market for
6 us. By working with a multinational giant company like
7 Siemens, we were able to take our technology and make it
8 available to the market in very low cost, high volume chips.
9 And that meant that there could be a consumer market for DSL.

10 Q. And, Doctor Tzannes, what was the second thing that Aware
11 got from Siemens?

12 A. I described earlier the development project of working
13 together to develop chips. We would get paid for that. So
14 over the years that we worked with Siemens, we were paid
15 millions of dollars for engineering work that we did with
16 their engineering teams.

17 Q. And what was the third thing?

18 A. We had a lot of intellectual property at the company, and
19 we were developing new intellectual property in patents. And
20 Siemens allowed us to keep all of those patents, to continue
21 to own them, and that allowed us to have the opportunity to
22 license them to other people.

23 Q. And what was the fourth thing that Aware got from
24 Siemens?

25 A. We also executed a license with them for rights to our

1 patents, so the right for them to use our patents. And we got
2 paid for that when they sold the devices we developed
3 together, which were chips.

4 Q. And, Doctor Tzannes, what is the fifth thing that Aware
5 got from Siemens?

6 A. One of the really important things that we got with
7 Siemens was the ability to participate in the rollouts of the
8 devices we built together of these chips. And the reason
9 that's important is the best way to learn about a market is to
10 understand its problems.

11 So when we rolled out the first chips, we understood what
12 was -- what was not working as well or what could be improved,
13 and based on that we were able to come up with new
14 technologies and often new standards. And that allowed us to
15 really build the business around licensing multiple
16 generations of DSL technology.

17 Q. And, Doctor Tzannes, if a company had come to you as the
18 CEO of Aware and only wanted a license to your patents, what
19 would you have called that?

20 A. We sort of refer to that as a naked patent license.

21 Q. And why do you refer to that as a naked patent license?

22 A. Because it doesn't involve anything other than a right to
23 use our patents. It's just a patent license.

24 Q. And would Aware have given, in your experience as a CEO,
25 the same monetary terms to a company that was asking for a

1 naked patent license as it did to a company that it was in a
2 joint development agreement with?

3 A. We would not.

4 Q. And why not?

5 A. For the reasons I mentioned above, these five points that
6 I -- that I went through. There was tremendous financial
7 benefit to us from those things. So other than just the
8 royalty for a naked patent license, we were benefiting in
9 financial ways and in building our business ways through the
10 relationship we had in the joint development agreement.

11 Q. And in your understanding as CEO, how would the terms
12 have been different for just a naked patent license?

13 A. They would have been higher, the rates for just a naked
14 patent license would have to have been higher.

15 MR. FINK: Mr. Diaz, could you pull up Exhibit 65-B,
16 appendix B, on the screen, please? And, Mr. Diaz, would you
17 zoom in on this part down at the bottom, royalties for VDSL
18 products? Thank you.

19 Q. (BY MR. FINK) Doctor Tzannes, do you see this image here
20 on the screen?

21 A. Yes, Mr. Fink, I do.

22 Q. And do you recognize what it's showing?

23 A. I do see what it's showing, yes.

24 Q. And what is that?

25 A. This is a royalty table between Aware and Siemens for

1 VDSL products. So in this case VDSL products are chips that
2 Siemens is selling for the VDSL market. This, I believe, is
3 a -- is a document or is a table that appeared in several
4 agreements between Aware and Siemens--once in 2007; it
5 appeared again in 2009. When we -- when we sold a group
6 within the company to Siemens, we restated this table. And?
7 This table is actually a follow-on to a prior table that
8 existed for VDSL products that was agreed to in 2004, I
9 believe.

10 Q. And, Doctor Tzannes, do you recall how the royalty
11 structure in this Siemens agreement came about?

12 A. I do. As you can see here, it's a percentage of the net
13 sales price of VDSL products.

14 Q. And, Doctor Tzannes, I believe you say this is a Siemens
15 agreement. Why does it say Infineon up at the top there?

16 A. So we're going to be using these names interchangeably
17 today. So Siemens became Infineon, became Lantiq. So those
18 are all the same company. They were the same people on the
19 side of Siemens, Infineon, and Lantiq, and they were
20 reorganizations. They were financial things that happened.
21 But effectively for the purposes of these discussions, they
22 were the same company.

23 Q. And, Doctor Tzannes, do you recall why this agreement
24 structured the royalty as a percentage of the net sales price?

25 A. Yes, I do.

1 Q. And why was that, Doctor Tzannes?

2 A. Well, when we first reached these agreements with -- with
3 Infineon or Siemens, the market didn't really exist as I
4 described earlier so we really didn't know what these products
5 could sell for. Neither of us knew that, neither Siemens nor
6 Aware. So we agreed that we would sort of join in the risk.
7 If the products could be sold for a lot of money, we would
8 make more money. If the products had to have a lower price,
9 we would make less. So the percentage reflected that sharing
10 of risk.

11 Q. And, Doctor Tzannes, do you see that this first entry
12 here is 18,438,389?

13 A. I do, yes.

14 Q. And do you know why that's different than the 20 million
15 units below that?

16 A. I think it's because at this point in time -- so, yes, I
17 do. I think it's because at this point in time we were
18 accounting for units that had already sold in the past.

19 Q. And, Doctor Tzannes, did Aware have an obligation to
20 license under RAND terms from the ITU?

21 A. Yes, we did.

22 Q. And what is your understanding of Aware's RAND
23 obligation?

24 A. It means that if a company comes to Aware and wants a
25 license to our patents, patents that are required for a -- a

1 standard, an ITU standard, we have to grant that license on
2 fair, reasonable, and non-discriminatory terms, FRAND terms as
3 they're called, and those -- the amount that we license them
4 for are often called FRAND rates.

5 Q. And, Doctor Tzannes, what do you mean by those rates have
6 to be fair?

7 A. So when we think about FRAND rates at Aware in this time
8 period, we were always thinking about naked patent licenses.
9 So I'll use an example to describe this because, even though
10 I've been doing this for a long time, I still find it
11 complicated and I find an example easier.

12 So if Company A comes to Aware and wants to license our
13 patents, we do so and we reach a rate with them. So we set a
14 rate for Company A. And then Company B comes and wants to
15 license patents, and we reach a rate with Company B. Now is
16 when the FRAND obligation and the FRAND rates become a
17 question.

18 If Company A and Company B are similar companies, those
19 rates should be similar. So we have to be consistent in the
20 rates that we grant to people who want our patents. Another
21 way to think about it is that if Company A and Company B are
22 not similar, then the rates should not be the same.

23 Q. And, Doctor Tzannes, briefly what do you mean by similar
24 there?

25 A. Well, in this context of -- of this industry, is the

1 company we are talking about a chip company? Is it a modem or
2 a transceiver company? Is it a company with whom we have a
3 joint development agreement or is it a company with whom we
4 don't have a joint development agreement? Those are some
5 examples.

6 MR. FINK: Mr. Diaz, would you please pull up the
7 first page of Exhibit 81, please?

8 Q. (BY MR. FINK) Doctor Tzannes, do you recognize this
9 document here?

10 A. Yes, I do.

11 Q. And were you involved in creating this document?

12 A. I was part of a group of -- a team of people who created
13 this document, yes.

14 MR. FINK: Mr. Diaz, would you please turn to page
15 114 of this document?

16 Q. (BY MR. FINK) Doctor Tzannes, do you see this outline
17 here on the screen?

18 A. Yes, I do.

19 Q. And are you familiar with this from your time at Aware?

20 A. Yes, I am.

21 Q. And, Doctor Tzannes, overall, what was Aware saying on
22 this slide?

23 A. So what we were saying on the slide in the -- in the
24 second bullet, for example, we were talking about the fact
25 that we had FRAND license obligations, which is what I just

1 described earlier. And in the first bullet, we were telling
2 on this slide that we had active licenses with certain
3 companies, and they're listed here: Ikanos and Lantiq. And
4 now Lantiq is Infineon is Siemens, just for filling in the
5 confusion here, hopefully.

6 Q. And, Doctor Tzannes, what was Aware telling a purchaser
7 like TQ Delta with a slide like this?

8 A. Well, the first bullet was telling them that we had
9 licenses with chip companies, the chip companies being Ikanos
10 and Lantiq. And the second bullet, I was simply saying we had
11 a FRAND license obligation.

12 Q. And, Doctor Tzannes, what if a modem company had told you
13 at the time that it believed that the rates were set by these
14 Ikanos/Lantiq agreements? Would you have agreed with that?

15 A. I would not have agreed with that.

16 Q. And why not, Doctor Tzannes?

17 A. Because these rates were not FRAND rates.

18 Q. Is there a reason why you're saying they're not FRAND
19 rates?

20 A. Well, yeah. Let's go back to a little more, again, the
21 Company A/Company B detail. The -- and I'll pick one of the
22 two--Lantiq, the Siemens agreement.

23 Company A is Siemens, and Company A is a chip company,
24 semiconductor company, and is a company with whom we have a
25 many-year joint development agreement. Company B in your

1 example is a modem company, so not a chip company, a modem
2 company, and a company with whom we do not have a many-year
3 license agreement.

4 So whatever rate we set with company A, Siemens, would
5 not be applicable to Company B, the modem company, because
6 they were not similar companies.

7 Q. Doctor Tzannes, what would you have said to a modem
8 company in 2009 that came to you at Aware and said they wanted
9 the same Siemens royalty rates because they are FRAND rates?

10 A. I wouldn't have agreed with that. I wouldn't have been
11 able to do that.

12 Q. And why not, Doctor Tzannes?

13 A. Well, really the only way that a modem company coming in
14 2009, since we've got a specific time now, it's a slightly
15 different discussion, would be for that company to get into I
16 guess a time machine and go back to 1998 and become a chip
17 company and develop multiple generations of technology with us
18 and make a market, make a chip market with us, and sign
19 multiple joint development agreements with us, and then they
20 would look to us similar to what Siemens looked to us in 2009.

21 And if they were able to do that, then I would be
22 obligated to give them a similar licensing rate. If they're
23 not able to do that, I cannot actually give them a similar
24 licensing rate because they are not similar.

25 Q. Doctor Tzannes, how long did Siemens have an agreement

1 with Aware?

2 A. Over 10 years. From 1998 until -- I think 2009 was the
3 last agreement we signed with Siemens.

4 Q. And, Doctor Tzannes, was that Siemens agreement amended
5 from when you first signed it in 1998?

6 A. Yes.

7 Q. Do you know how many times?

8 A. 25, 30 times. Multiple times per year.

9 Q. And to be clear, Doctor Siemens, sorry, strike that.

10 To be clear, Doctor Tzannes, was Siemens acquired by
11 another company?

12 A. So technically Siemens spun off its chip group from
13 Siemens into a company called Infineon, which is why we saw
14 the name Infineon in our previous document.

15 Q. And when was that?

16 A. That was in 1999. So right after we did our first
17 agreement.

18 Q. And when Siemens became Infineon, did they inherit the
19 same agreement from Aware's perspective that it had with
20 Siemens?

21 A. Yes, they did. Yes.

22 Q. And did Aware continue to work with the same people at
23 Infineon that it had at Siemens?

24 A. For the most part, yes.

25 Q. And so was Infineon acquired by another company?

1 A. A similar transaction, Infineon ended up spinning off
2 part of its business into another company called Lantiq, which
3 is why we see Lantiq occasionally up here. And that happened
4 in 2009, I believe.

5 Q. And from Aware's perspective, did Lantiq then inherit the
6 relationship and the agreement that Aware had with Siemens?

7 A. Yes, they did.

8 Q. And did Aware continue to deal with the same people at
9 Lantiq that it had at Infineon and then at Siemens?

10 A. For the most part, yes, of course.

11 Q. And do you know at what happened to the company after
12 that?

13 A. I do just because I've had friends Lantiq when it was --
14 when it was spun out. Lantiq was acquired subsequently by
15 Intel in about 2015.

16 Q. And did Aware sell its DSL group in 2009?

17 A. We did.

18 Q. And who did Aware sell it to?

19 A. We sold the DSL group to Lantiq.

20 Q. And why did Aware sell that group to Lantiq?

21 A. Really it was financial reasons.

22 Q. And can you explain what those financial reasons are,
23 Doctor Tzannes?

24 A. Yes. So when we started in the licensing business in the
25 late '90s, we had been very successful. We had lots of

1 licensees; we were signing lots of joint development
2 agreements.

3 And over time the chip industry, the part of the DSL
4 industry that built and sold these semiconductor devices,
5 consolidated a lot. Some of it was acquisition. Some of it
6 was because some companies didn't make it. And by the time
7 2008, 2009, rolled around, there were only a small number of
8 chip suppliers, and most of them were not paying us license
9 fees. Most chips, to speak precisely. Most chips being sold
10 were not paying us license fees.

11 Q. And when Aware sold its business to Lantiq, did it keep
12 its royalty rates the same?

13 A. Yes, we did.

14 Q. And why was that?

15 A. We really didn't even discuss it to the best of my
16 recollection. We wanted business to remain the same. They
17 were still going to be selling chips. They had done a lot of
18 good for us, as I described, over the years. They had helped
19 us create a market and build a business.

20 They were also buying a group of ours, the group that was
21 designing silicon devices for years, and they were making them
22 Lantiq employees. So they were taking a large percentage of
23 our company, giving them jobs, and allowing them to continue
24 doing what they had been spending their career doing, which
25 was designing and building DSL chips. So they were very happy

1 about that, and that made us happy as well.

2 Q. And, Doctor Tzannes, did Aware retain anything related to
3 DSL when it sold that group to Lantiq?

4 A. Yes, we did.

5 Q. And what did Aware retain?

6 A. We retained our intellectual property rights. We
7 retained our patents.

8 Q. And why did Aware do that?

9 A. We did that because we believed that they were -- they
10 were very valuable, and we believed that there would be
11 opportunities for us to make money from them, to generate
12 shareholder value from licensing those patents -- from
13 licensing the patents.

14 Q. And did Aware eventually end up deciding to sell those
15 patents?

16 A. Yes, Mr. Fink, we did decide to sell the patents.

17 Q. And when?

18 A. We decided in 2011, and I think we -- we completed the
19 sale in 2012.

20 Q. And why did Aware decide to sell its patents at that
21 time?

22 A. We decided to sell them because the board of Aware and
23 our -- our shareholders -- Aware was a public company, so
24 we -- we were beholden to our shareholders. They were
25 concerned that trying to license patents on our own was going

1 to cause problems.

2 And the problems they were worried about was, first of
3 all, potential retaliation back to our business. We were
4 still in business as a company. We were no longer selling DSL
5 licenses, but we were selling DSL test products. So there was
6 fear that if we went and started litigating in the industry
7 that we were selling into, different products into, there
8 could be a retaliation back to that business.

9 Some of our board members were afraid that there could be
10 personal retaliation for becoming involved in patent
11 litigation suits. And there was also concern that it was
12 going to take a lot of time and potentially a lot of money to
13 ever realize any actual gains from patent licenses. So for
14 that reason, the board decided that we should try to sell our
15 patent portfolios.

16 Q. And, Doctor Tzannes, did Aware ever attempt to get a DSL
17 company to take a naked patent license?

18 A. No. In fact, we never did.

19 Q. Why not?

20 A. For largely for the reasons I mentioned above. We felt
21 that it would inevitably become something that could become
22 problematic for us.

23 MR. FINK: Mr. Diaz, would you please put slide 13
24 of Defendants' opening up on the screen, please?

25 Q. (BY MR. FINK) Doctor Tzannes, do you see this image here

1 on the screen?

2 A. Yes, I do.

3 Q. Do you understand what this image is?

4 A. Yes, I do.

5 Q. And what do you understand it to be?

6 A. So a Form 10-K is a form that a publicly-traded company
7 has to file every year. It's called an annual report, and it
8 outlines the results for the year.

9 Q. And is this from a year that you were involved in Aware's
10 patent management operations?

11 A. Yeah, this is for the year 2011. I was executive
12 chairman most of that year, and I was running the patent
13 management operations after that.

14 Q. And, Doctor Tzannes, do you see this highlighted language
15 here on the screen?

16 A. Yes, I do.

17 Q. And so, Doctor Tzannes, do you understand -- what is your
18 understanding of what this highlighted language is telling us?

19 A. It says that our patent licensing revenue during the last
20 three years was limited to an insignificant amount of revenue.

21 Q. And, Doctor Tzannes, does that mean regarding DSL
22 royalties?

23 A. This has nothing to do with DSL royalties. We reported
24 in this form the royalties from our DSL joint development
25 agreements in a different place in a line in the financial

1 statements called royalties. So this doesn't have anything to
2 do with DSL royalties.

3 Q. What is this referring to, then, Doctor Tzannes?

4 A. So this refers to licenses that we may have executed, and
5 these would be naked patent licenses that we may have executed
6 outside of DSL. For example, we had written some MP3 audio
7 patents, and we had successfully licensed them in a naked
8 patent licensing program. And that would be an example of the
9 kind of revenue that would be in this patent management line.

10 Q. Doctor Tzannes, what ultimately happened to the DSL
11 portfolio that were retained?

12 A. We ended up selling it to TQ Delta for \$16 million in
13 2012.

14 Q. And do you believe that was a good price?

15 A. No. I think we probably could have done better if we had
16 gone ahead and tried to license these patents on our own.

17 MR. FINK: Pass the witness.

18 THE COURT: Cross-examination by the Defendants?

19 MR. STEVENS: Yes, Your Honor.

20 THE COURT: Please proceed, Mr. Stevens.

21 MR. DACUS: May we approach, Your Honor?

22 THE COURT: You may distribute binders.

23 (Pause in proceedings.)

24 THE COURT: All right. Let's proceed with cross.

25 MR. STEVENS: Thank you, Your Honor.

CROSS EXAMINATION

BY MR. STEVENS:

Q. Doctor Tzannes, I want to pick up on your analogy about company A and company B. Is that okay?

A. Yes, sir.

Q. And I think -- and correct me if I'm wrong, but I think I heard your testimony to be that if company A gets a rate and Company B approaches the patent owner at a later point in time and is a similarly-situated company, then FRAND compels company B to get a similar rate. Is that right?

A. Yes.

Q. Okay. So if Company A were to get a rate on a certain standard of something like either 14 cents or 68 cents for given years, and then Company B were there later and they -- and the patent owner was attempting to charge that company \$1.66, that would violate the FRAND obligations. Is that right?

A. Well, you have to -- I would say no, first of all.

Q. Okay. Again, two companies are similarly-situated. You think it's okay to charge company A either 14 cents or 68 cents depending upon the year, and try to charge company B \$1.66 for the same standards. You think that's okay.

A. You didn't explain to me how they are similarly-situated, which is a very important part of the comparison between companies A and B.

1 Q. I want you to assume that they are similarly-situated.
2 Let's say they are competitors, they make competitive
3 products. Is that okay, sir?

4 A. That may not be enough to make them similarly-situated.

5 Q. Okay. Let's just take whatever your definition in your
6 mind is of similarly-situated. Is that okay?

7 A. Okay.

8 Q. And if company A were to take a license and have to pay
9 either 14 cents or 68 cents depending upon the year, and the
10 same patent owner goes over to company B for the same standard
11 and tries to say, you need to pay me \$1.66, that would violate
12 the FRAND obligation. Is that right?

13 A. Not necessarily, because if Company A -- I'll pick one of
14 the two. If either company A or company B were providing some
15 other benefit--I'm assuming I'm Aware on the other side of
16 this--some other benefit to Aware, then that would become a
17 factor in addition to just the royalty rate.

18 So that has to be taken into consideration because it's
19 not necessarily just money that matters for Aware, yes.

20 Q. Let's assume that they're naked licenses as you used that
21 term.

22 A. Okay.

23 Q. All right? So let's assume similarly-situated companies.
24 Is that fair?

25 A. Yes.

1 Q. And let's assume they're both naked licenses.

2 A. Yes.

3 Q. Okay? Again, if a patent owner were to say, all right,
4 company A, we'll let you do it with either 14 cents or 68
5 cents, and they sign that license, and then later they were
6 trying to get \$1.66 out of a similarly-situated company, also
7 for a naked license, wouldn't that violate the FRAND
8 commitment?

9 A. Are we talking about the same time frame, same years?

10 Q. Let's say the years in question are the same. Obviously
11 there's company A and then a later point in time there's
12 company B, just like in your hypothetical.

13 A. I think if the patents that are being discussed are
14 identical and the use of the patents, in other words, the
15 products that companies A and B are the same, and the areas in
16 which those products are being sold are the same, and
17 potentially the volume, you didn't talk at all about what the
18 volume of these different products might have been, but
19 assuming they are also the same, it's possible that that would
20 be something that you would need to be careful about. But you
21 have to really look into the details in great detail.

22 Q. Okay. I want to go back to your time at Aware.

23 A. Yes.

24 Q. Is that fair, sir?

25 A. Sure.

1 Q. Now, one of the documents that you discussed on your
2 examination was the license agreement between Infineon and
3 Aware. Is that right?

4 A. I did, yes.

5 Q. Okay.

6 A. Today, you mean.

7 Q. I'm sorry. If I misspoke, I meant today.

8 A. Yes.

9 Q. Okay.

10 MR. STEVENS: If we could pull up Exhibit 65-B,
11 please.

12 Q. (BY MR. STEVENS) And this is a copy of that 2007
13 agreement between Infineon and Aware. Is that right, sir?

14 A. I don't see 2007 here, but I'll take your word for it.

15 Q. Okay. Now, in your relationship between those companies,
16 this in 2007 marked a new start of rights and obligations
17 between the parties. Is that right?

18 A. To the best of my recollection, what this was was an
19 attempt by our two companies to put what had been a number of
20 amendments that were sort of hastily often put together into
21 one single agreement.

22 Q. Perhaps I didn't ask a good question. This agreement
23 that we see on the screen, this represents a new start of
24 rights and obligations between these two companies. Is that
25 correct, sir?

1 A. I'm not sure it does. What I'm saying is I think it
2 represented a recap of a lot of things that had been written
3 in other agreements into one place.

4 Q. Okay.

5 A. It may have also had something new related to a new
6 technology, but I'm not sure.

7 Q. Okay.

8 A. I'd have to look at the whole agreement.

9 Q. And you do agree with me this is called a license
10 agreement. This is not termed a joint development agreement
11 at the top. Is that right?

12 A. This says license agreement. It probably talks about
13 development inside the agreement.

14 Q. So I'd like to look at the bottom of this page, the
15 whereas clause that spills over to the next page. And it
16 says, "Whereas, this agreement shall also be regarded as a new
17 start of rights and obligations and both parties have the
18 common understanding that all claims of either party arising
19 out of or in connection with agreements concluded between the
20 parties prior to this agreement shall be regarded and treated
21 as fulfilled by the other party."

22 Did I read that correctly, sir?

23 A. Yes, you did.

24 Q. Thank you.

25 And in this license agreement, Aware provided a license

1 to Infineon for VDSL and any other related derivative or
2 extension standards. Is that correct, sir?

3 A. Relying on memory -- I'm not seeing that on the screen,
4 but relying on memory, that's -- that could be true.

5 Q. Okay.

6 A. We did that at some point. I'm not sure if it was this
7 agreement.

8 Q. All right. Well, let's look at section 1.31 on page 5,
9 please.

10 A. Okay.

11 Q. And, again, here 1.31 right in the middle --

12 A. Yes, I see it.

13 Q. And, sir, so the VDSL technology defined in this
14 agreement was VDSL2 and any other related derivatives or
15 extensions. Is that right?

16 A. Correct.

17 Q. And G.bond is a derivative or extension of VDSL. Is that
18 right?

19 A. I don't think so.

20 Q. Okay. And G.INP is a derivative or extension of VDSL?

21 A. I don't think that's -- I mean, we'd have to look at the
22 definition of derivative extensions if you'd like.

23 Q. Okay. So you don't know about G.INP one way or the
24 other?

25 A. I don't think it was either, but I would rather get

1 refreshed on the definition of derivative and extensions if
2 that's okay.

3 Q. Okay. And I'd like to look at the royalty terms that you
4 discussed with your counsel.

5 MR. STEVENS: If we could go to page 27 of this
6 agreement.

7 Q. (BY MR. STEVENS) At the bottom we see royalties for VDSL
8 products. Do you see that, sir?

9 A. Yes. This looks like what we were looking at earlier.

10 Q. Yes, sir. And you said that the VDSL product in question
11 here was the chipset. Is that right?

12 A. It's the chip that Infineon -- in this case, I think they
13 were called Infineon built. It was a digital device.

14 Q. Okay. And if we look at the next two pages, the price
15 that we saw on that page would actually go down if the chip
16 included other functionalities. Is that correct, sir?

17 A. Yes, it is.

18 Q. Okay. And then --

19 MR. STEVENS: We can take that down.

20 Q. (BY MR. STEVENS) -- there came a point in time where you
21 sold off your DSL business. Is that right?

22 A. There is a caveat to what you just said about it going
23 down.

24 Q. Okay. Mr. Fink will have all the opportunity --

25 A. Oh, I'm sorry. Thank you.

1 Q. All right. There came a point in time after the
2 agreement that we just looked at that you sold off your
3 business line. Is that right?

4 A. We -- as I said earlier, we decided to sell the group,
5 yes.

6 Q. And that occurred in early 2009. Is that right?

7 A. Yeah, I think it -- I think the agreement was in late
8 2009, but yes.

9 Q. Okay. Let's look at Exhibit 65-A, please.

10 A. Okay.

11 Q. And this is the 2009 agreement between Aware and Lantiq.
12 Is that right?

13 A. Yes, sir.

14 Q. And this agreement was after you had already sold off the
15 business. Is that right?

16 A. I think it was at the same time actually.

17 Q. Okay. Let's look at the second page, and the second
18 whereas clause. It says, "Whereas, the parties have entered
19 into the asset purchase agreement according to which Aware
20 sells certain of its assets and liabilities of its DSL
21 technology and home networking technology to Infineon or its
22 designee, and the transactions contemplated by such asset
23 purchase agreement shall be completed as of the date hereof."

24 Did I read that correctly, sir?

25 A. You did, yes.

1 Q. So from this day forward, you did not have a joint
2 development understanding with respect to DSL chips. Is that
3 correct?

4 A. That is correct.

5 Q. All right.

6 MR. STEVENS: And, again, if we look at the appendix
7 B, which bears the production number Aware 96? Aware 96. So
8 there you go. Perfect. Thank you.

9 Q. (BY MR. STEVENS) So at the bottom of this, we see the
10 royalties in this agreement. Is that correct, sir?

11 A. Yes, we do.

12 Q. And, again, the VDSL product here is the chip. Is that
13 correct, sir?

14 A. Yes, it is.

15 Q. And over the next two to three pages, again, the price
16 would actually be lower, it would be diluted in the event that
17 the chip Lantiq was selling had functionality beyond that of
18 DSL. Is that correct, sir?

19 A. Opportunity for me to add the caveat--if the selling
20 price of the chip was increased due to that additional, the
21 things being added.

22 Q. Fair enough. So in the event that the chip that Lantiq
23 made had a higher price because it had some other technology
24 on it, then the royalty would actually be lower than what we
25 see here on the screen. Is that right?

1 A. Correct, the concept being that if there -- if in this
2 case Infineon is adding value that is creating a more valuable
3 chip, we would agree that our percentage should go down a
4 little bit.

5 MR. STEVENS: We can take that down.

6 Q. (BY MR. STEVENS) Now, there came a point in time after
7 you were CEO and after you were the chairman of the board that
8 you were in charge--and I'm going to get this wrong so correct
9 me--of patent management or --

10 A. So we had called it two different things.

11 Q. Okay.

12 A. So you're forgiven, I guess. Patent licensing operations
13 for a while, and then we called it patent management
14 operations. And I was in charge of that group, yes.

15 Q. And one of the things that you did while in charge of
16 that group is you sold certain patents to TQ Delta. Is that
17 right?

18 A. Yes, sir.

19 Q. And you didn't sell TQ Delta all of Aware's DSL patents;
20 they got a fraction. Is that true?

21 A. Well, they got most of them. We kept a small number
22 because, as I mentioned earlier, we had a testing diagnostics
23 business that we were still aspiring to build. So we kept
24 some patents that related to DSL tests and diagnostics.

25 Q. Okay. So when you sold certain patents to TQ Delta, you

1 kept some. Correct?

2 A. A small number, yes.

3 Q. And those patents related generally to diagnostics. Is
4 that correct?

5 A. Generally, yes.

6 Q. All right. And were you the one -- I withdraw that.

7 You were involved with the patent purchase agreement
8 between Aware and TQ Delta. Is that right?

9 A. I was in -- yes, I was involved.

10 Q. Okay. And one of the things that you did in the
11 PowerPoint presentation that you looked at with your counsel
12 is you told TQ Delta about the FRAND obligations. Is that
13 right?

14 A. I told TQ Delta and anyone who had that -- that
15 presentation was shown to a number of companies, but anyone
16 who was looking at that presentation was being told that we
17 had a FRAND obligation at the ITU.

18 Q. Okay.

19 MR. STEVENS: If we could pull up Exhibit 62,
20 please.

21 Q. (BY MR. STEVENS) Sir, this is the patent purchase
22 agreement between Aware and TQ Delta. Is that right?

23 A. Yes, sir.

24 Q. And if we look at section 5.3, which is called Standards
25 Obligations on page 4, the section --

1 MR. STEVENS: There we go. Thank you. If we could
2 blow that up.

3 Q. (BY MR. STEVENS) The agreement states purchaser -- and
4 I'm going to add parenthetically, purchaser here is TQ Delta.
5 Is that right?

6 A. Yes, I believe so, yes.

7 Q. So when we see purchaser, it's TQ Delta. When we seller,
8 that's Aware. Do I have that right, sir?

9 A. Yes.

10 Q. Okay. So "purchaser acknowledges that seller has
11 committed to certain licensing obligations with respect to the
12 licensing of standard essential assigned patents as set forth
13 in Schedule F and the documents referenced therein." That's
14 one of the things that you actually put into the contract in
15 selling the patents to TQ Delta. Is that correct, sir?

16 A. Is schedule F a list of patents?

17 Q. Sir, did I read this --

18 A. Yes, you read this correctly. I'm sorry. Yes, sir.

19 Q. Thank you.

20 Now, one of the things that was on your mind when Aware
21 was selling its patents to TQ Delta was, well, what if TQ
22 Delta doesn't honor its obligation, is there a possibility
23 that someone might sue Aware. That was one of the
24 circumstances that was on your mind as someone at Aware at the
25 time. Is that right?

1 A. I don't recall that being on my mind at all.

2 Q. You don't recall that being on your mind at all?

3 A. No.

4 Q. You don't require -- you don't remember requiring TQ
5 Delta to sign up to defend you in the event that you were ever
6 sued because they breached the obligation that Aware
7 originally had. You don't remember that?

8 A. I don't remember that, but -- but I -- I could see how
9 the lawyers at Aware would argue for that. I'm not saying it
10 didn't happen. I'm saying I don't remember it.

11 Q. Okay.

12 MR. STEVENS: Well, let's look together at Schedule
13 F. It's on the page bearing production number Aware 1855,
14 please. So if we could blow up the second half of the top
15 paragraph. There we go. Thank you.

16 Q. (BY MR. STEVENS) On the fourth to the bottom line, I
17 want to make sure I read this right, sir. And, again,
18 purchaser is TQ Delta, seller is Aware. Is that correct, sir?

19 A. Yes.

20 Q. Purchaser, TQ Delta, agrees to indemnify seller, Aware,
21 and seller's assigns and successors in interest, for all legal
22 fees, costs, damages, and awards incurred by, or imposed on,
23 seller or seller's assigns or successors in interest, as a
24 result of, or related in any way to, purchaser's or
25 purchaser's assigns or successors in interest, non-compliance

1 with such standards obligations.

2 Did I read that correctly, sir?

3 A. Yes, you did.

4 Q. So one of the things you required TQ Delta to do is to
5 indemnify you, that means pay your legal fees and pay any
6 costs in the event that Aware got sued because they breached
7 the commitment. Is that correct, sir?

8 A. Yes, we did.

9 Q. All right.

10 MR. STEVENS: Now, if we look back a little bit
11 earlier in this agreement at page -- production number Aware
12 1824. It's Schedule B.

13 Q. (BY MR. STEVENS) And you mentioned a moment ago that TQ
14 Delta did not get all the patents Aware had at the time.
15 Aware decided to keep certain patents for itself. That's what
16 you said a few minutes ago. Right?

17 A. So this is a TQ Delta agreement. Yes, that's correct.

18 Q. You had a Schedule B here is excluded assets. These are
19 patents of Aware's that you did not give to TQ Delta, did not
20 sell to TQ Delta. Is that right?

21 A. I'm sort of taking your word for it. But, yes, it says
22 excluded assets.

23 Q. All right. And if we go down to the seventh row, we see
24 a particular United States patent. Do you see that, sir?

25 A. Yes.

1 Q. And it's Patent No. 6,658,052. Did I read that right?

2 A. You did, yes.

3 Q. And the title of that patent that did not go to TQ Delta
4 is "Multicarrier modulation system with remote diagnostic
5 transmission mode." Do I have that right, sir?

6 A. Yes, sir.

7 Q. Do you appreciate that this is in the exact same family
8 as one of the asserted patents in this case?

9 A. Do I appreciate that?

10 Q. Do you know that?

11 A. I don't know that.

12 Q. So, in fact, certain of the families -- you didn't even
13 sell the entire family to TQ Delta. You only sold them a
14 limited number of patents within a certain patent family. Is
15 that right?

16 A. That's what you're telling me, sir.

17 Q. Okay. Do you have any reason to think I'm wrong about
18 that?

19 A. No. I suspect you -- you aren't tell me something that's
20 not true.

21 Q. Okay. Do you know who Aware ultimately sold this '052
22 Patent to?

23 A. I do not.

24 Q. Are you aware that a couple of years later, Aware sold
25 off these patents to Broadcom?

1 A. I do vaguely recall that that took place. I was no
2 longer at Aware, so I -- but I think I heard that from
3 someone, yes.

4 Q. So Broadcom actually owns some of the patents in this
5 same family that we're here to talk about in this trial. Is
6 that right, sir?

7 A. Apparently, yes.

8 Q. Okay.

9 MR. STEVENS: We can take that down.

10 Q. (BY MR. STEVENS) So when you left Aware, you went
11 to -- you started with your brother Tzannes Patent Management.
12 Is that right?

13 A. Among other things. But, yes, we did do that.

14 Q. And TQ Delta has been your biggest client with that
15 company over the past decade. Is that right?

16 A. Correct, yes.

17 Q. Now, just to be clear, you're not an investor, you don't
18 have any ownership interest in TQ Delta. Is that right?

19 A. No, I do not.

20 Q. And so they're not going to share with you any proceeds
21 they get from any licensing. Is that right?

22 A. That is correct.

23 Q. Okay. In your 10 years, one of your roles has been a
24 litigation consultant to TQ Delta. Is that fair?

25 A. I guess, yes.

1 Q. Did you tell Ms. Divine or others at TQ Delta about the
2 rates that Aware had charged Lantiq and Infineon as part of
3 your role with them?

4 A. I did not, no.

5 Q. Okay.

6 MR. STEVENS: Your Honor, I pass the witness.

7 THE COURT: All right. Is there redirect, Mr. Fink?

8 MR. FINK: Briefly, Your Honor.

9 THE COURT: Please proceed with redirect
10 examination.

11 REDIRECT EXAMINATION

12 BY MR. FINK:

13 Q. Mr. Tzannes, earlier counsel showed you I guess part of
14 an agreement that had an indemnification clause. Do you
15 recall that?

16 A. I do. It was -- who was it between? I'm sorry. We
17 looked at a lot of agreements. I think it was between Aware
18 and TQ Delta. Correct?

19 Q. I believe so, sir.

20 A. Yes, I do recall that.

21 Q. And in your experience as a CEO, are indemnification
22 clauses common in selling products or assets?

23 A. Yeah. I would look at that language as -- as a -- as a
24 CEO as sort of standard language that lawyers would want to
25 put into any agreement involving sales of assets.

1 Q. And are you aware of anyone ever threatening to sue Aware
2 related to TQ Delta?

3 A. No, I am not.

4 MR. FINK: No further questions.

5 THE COURT: Additional cross?

6 MR. STEVENS: No, Your Honor.

7 THE COURT: All right. You may step down, Doctor
8 Tzannes.

9 THE WITNESS: Thank you, Your Honor.

10 THE COURT: You're welcome.

11 MR. DAVIS: May Doctor Tzannes be excused?

12 THE COURT: Any objection from Defendants?

13 MR. BARTON: No objection, Your Honor.

14 THE COURT: All right. Doctor Tzannes, you are
15 excused, which means you're free to stay with us, you're also
16 free to leave. You're no longer subject to the Rule.

17 Counsel, approach the bench, please.

18 (The following was had outside the hearing of the
19 jury.)

20 THE COURT: All right. Am I correct Plaintiff's
21 going to call Defendants' corporate rep adversely at this
22 point?

23 MR. BARTON: Yes, Your Honor.

24 THE COURT: Okay. And remind me who that is, Mr.
25 Dacus? You said he wasn't here during voir dire.

1 MR. DACUS: It's Steve Wauters.

2 THE COURT: Steve Wauters.

3 MR. DACUS: Yes.

4 THE COURT: Okay. And he is the gentleman who's
5 been at your table.

6 MR. DACUS: Yes, Your Honor.

7 THE COURT: Okay. How long do we expect this
8 witness to take?

9 MR. DAVIS: An hour, 20, 30 minutes at the most,
10 Your Honor, is my expectation.

11 THE COURT: And I assume a longer cross? You are
12 basically going to put on your direct as your cross?

13 MR. DACUS: Not a whole lot longer. We are going to
14 do that, but it won't be 30 minutes or so.

15 THE COURT: Okay. All right. Let's go. Thank you.

16 (The following was had in the presence and hearing
17 of the jury.)

18 THE COURT: Plaintiff, call your next witness,
19 please.

20 MR. DAVIS: Your Honor, Plaintiff calls Steven
21 Wauters to the stand.

22 THE COURT: All right. If you'll come forward and
23 be sworn, Mr. Wauters.

24 (Whereupon, the oath was administered by the Clerk.)

25 THE COURT: Please come around, have a seat on the

1 witness stand.

2 Ladies and gentlemen of the jury, just so you'll
3 understand, Mr. Wauters is here as the corporate
4 representative of CommScope, and him being called by the
5 Plaintiff is what we lawyers call being called adversely,
6 which means that the Plaintiff gets to examine him as if it
7 were a cross-examination and is permitted to lead the witness.

8 And then Defendants will cross-examine him in a way they
9 would do a direct examination of the witness. The rules are a
10 little bit reversed when you have an adversely-called witness.
11 Just for informational purposes.

12 Mr. Davis, you may proceed.

13 MR. DAVIS: Thank you, Your Honor.

14 STEVEN WAUTERS, SWORN,
15 having been duly sworn, testified under oath as follows:

16 DIRECT EXAMINATION

17 BY MR. DAVIS:

18 Q. Good afternoon, Mr. Wauters.

19 A. Good afternoon.

20 Q. I'm Bo Davis. I represent the Plaintiff TQ Delta in this
21 case. You and I have never met before. Correct?

22 A. Correct.

23 Q. It's nice to meet you.

24 You were not here on Friday for opening statements. Is
25 that right?

1 A. That's correct.

2 MR. DAVIS: Can I please have
3 Plaintiff's -- Defendants' opening slide 3, please, Mr. Diaz?

4 Q. (BY MR. DAVIS) This slide was shown to the jury during
5 opening statements by CommScope. Do you see here, sir, where
6 CommScope identified that it owns 15,000-plus global patents
7 and patent applications?

8 A. Yes, I do.

9 Q. And it's true, sir, isn't it, that CommScope is not
10 asserting any of those patents as prior art to any of TQ
11 Delta's patents. Correct?

12 A. I am not aware if that's the case or not.

13 Q. And it's also true, is it not, sir, that none of these
14 15,000-plus DSL patents -- I'm sorry, global patents are DSL
15 standard essential patents? Isn't that correct?

16 A. I believe some of these are related to DSL patents.

17 Q. But none of them are standard essential. Isn't that
18 correct?

19 A. I do not know.

20 Q. Okay. And were you here when Mr. Marcos Tzannes, the
21 inventor, testified, sir?

22 A. Was that also on Friday?

23 Q. Yes, it was.

24 A. I was not here Friday.

25 Q. Okay. So if that -- if Mr. Tzannes testified that he was

1 unaware that CommScope had ever submitted any contributions
2 for any inventions to the ITU, would you have any reason to
3 disagree with that?

4 A. I'd have to defer to my legal team and technical experts.

5 Q. But you're not aware as you sit here?

6 A. I'm not.

7 Q. And you are here on behalf of CommScope?

8 A. That is correct.

9 Q. You are their corporate representative?

10 A. Yes, I am.

11 Q. And you speak for the entire company. Is that right?

12 A. Yes, I do.

13 Q. Okay. Now, do you know whether or not the installation
14 that CommScope made for the Dallas Cowboys stadium, do you
15 know whether that uses DSL?

16 A. For Dallas Cowboy stadium, I believe it does not utilize
17 DSL.

18 Q. Okay.

19 A. Based on my knowledge.

20 Q. And you understand from your time here in the courtroom
21 this week, that this case is about DSL?

22 A. Yes, correct.

23 Q. And so if the Dallas Cowboys stadium doesn't use DSL,
24 then whatever technology installation CommScope did for the
25 Cowboys is really irrelevant to this lawsuit. Would you agree

1 with that?

2 A. Correct.

3 Q. Okay. Thank you.

4 MR. DAVIS: You can take that down, please, Mr.
5 Diaz.

6 THE COURT: Mr. Wauters, adjust the microphone a
7 little closer to you, please.

8 THE WITNESS: Yes, Your Honor.

9 THE COURT: Thank you. Go ahead, Mr. Davis.

10 MR. DAVIS: Thank you, Your Honor.

11 Q. (BY MR. DAVIS) Would you agree with me, sir, that
12 CommScope does believe that its own patents are important?

13 A. Absolutely.

14 Q. And if somebody were using CommScope's patents without
15 permission, that CommScope wouldn't just sit idly by and let
16 that happen. Is that correct?

17 A. That is correct.

18 Q. CommScope would do something about that?

19 A. Yes.

20 Q. They might send a letter. Is that true?

21 A. What practices we would use, I'd have to again defer to
22 my legal team on how they would actually approach the
23 situation.

24 Q. Okay. So you don't have any opinion one way or another
25 whether it would be reasonable to send a letter to someone

1 that you believe is using your patents without permission.

2 A. Again, I'm not familiar with the exact processes that our
3 legal team uses in order to go actually challenge a patent.

4 Q. So you're not aware whether CommScope's ever sent a
5 letter to anyone about their patents?

6 A. I am personally not familiar.

7 Q. Okay. What about on behalf of the company? You don't
8 know?

9 A. I do not know.

10 Q. Okay. So is it safe to say that your personal knowledge
11 on behalf of CommScope here today, you don't know one way or
12 another?

13 A. I am not familiar with the details on how our legal team
14 again goes off and enforces our patents and engages with other
15 companies.

16 Q. Would you agree that sending a letter is usually a -- is
17 a reasonable thing to do?

18 A. It would seem to me that would be reasonable, yes.

19 Q. It would at least put someone on notice--right?--that
20 there is at least a question or a concern by the patent owner
21 that someone is using their patents without permission.

22 A. It would seem reasonable possibly also combined with
23 other lines of communication as well.

24 Q. And CommScope actually has -- would take additional steps
25 to protect its patents, wouldn't it?

1 A. Yes, we would.

2 Q. I mean, you would even go so far as to file a lawsuit,
3 wouldn't you, if somebody was on your -- using your patents,
4 on your property, refusing to stop, you would have to file a
5 lawsuit to make them stop, have a jury decide the issue, and
6 to make them stop. Is that right?

7 A. Again, I'd have to defer to my legal team relative to
8 how -- what steps they would take between initial notification
9 and ultimately filing a lawsuit. Again, I'm not familiar with
10 the exact details on how we would approach all those
11 situations.

12 Q. You would agree with me that ultimately, if -- if letters
13 don't work, if phone calls don't work, if exchanging
14 information doesn't work, that's the only thing a patent owner
15 can do to enforce and protect their patents.

16 A. I don't know if those are the only things that we could
17 do. Again, I'm not familiar with the -- with the details of
18 how we would actually approach each of those patent dispute
19 situations.

20 Q. Well, you're not aware -- can you give me an example of
21 something else you could do that, when everything else had
22 failed, negotiations, discussions, can you give me an example
23 of anything else you could do as a last resort to enforce your
24 patents against someone?

25 A. Again, I'm not -- I'm not familiar with the -- with the

1 processes that we would utilize in those situations.

2 Q. Okay. Now, CommScope's been described as an innovative
3 company. Would you agree with that?

4 A. Yes, sir.

5 Q. And CommScope, though, had no DSL CPE division within its
6 company before it acquired ARRIS. Is that correct?

7 A. That is correct.

8 Q. Okay. And so all of the innovation for DSL CPE devices,
9 it actually acquired from another company. Is that correct?

10 A. That is my understanding, yes.

11 Q. You don't think there's anything wrong with acquiring
12 innovation from one company and then owning it and being proud
13 of it, do you?

14 A. I agree.

15 Q. Okay. And the same thing would apply to patented
16 technology. Wouldn't you agree with that?

17 A. Correct.

18 Q. And the company that you acquired, ARRIS, that company
19 actually acquired another company called 2Wire. Correct?

20 A. I believe that 2Wire was acquired by Pace, and my
21 understanding then is that ARRIS acquired Pace. So I believe
22 that's the sequence.

23 Q. So CommScope acquired ARRIS, ARRIS had previously
24 acquired Pace, Pace had previously acquired 2Wire.

25 A. That's my understanding.

1 Q. And now all those companies are rolled up into CommScope.
2 Correct?

3 A. Yes.

4 Q. And so what was originally four different companies has
5 now become one. Is that right?

6 A. Correct.

7 Q. Okay. And are you aware, sir, that during the last 10
8 years of discussions between TQ Delta and CommScope, that is
9 the period of time during which CommScope acquired ARRIS?

10 A. Yeah. CommScope acquired ARRIS nearly four years ago, so
11 that was within -- obviously within the last 10 years.

12 Q. And are you aware, sir, that during the course of the
13 negotiations over the last almost 10 years between CommScope
14 and my client TQ Delta, there was a period of time in which
15 CommScope said, hey, can we put our discussions on pause while
16 we finish the acquisition of ARRIS? Are you aware of that?

17 A. That's my understanding.

18 Q. And TQ Delta acceded to that. Correct? They waited
19 during that time to then pick up discussions after you had
20 completed --

21 A. I believe that's the case, yes.

22 Q. Okay. Thank you.

23 MR. DAVIS: Could I have Exhibit 68, please, Mr.
24 Diaz? Could I have paragraph 2 on the second page?

25 Q. (BY MR. DAVIS) You've seen this document in court this

1 week, Mr. Wauters? This is the patent licensing disclosure
2 statement that TQ Delta signed?

3 A. I don't recall specifically seeing this throughout this
4 week, but I'll take your word for it.

5 Q. Do you recognize seeing documents like this at all?

6 A. Yes.

7 Q. Okay. And as I mentioned, this is a patent licensing
8 disclosure statement. And are you aware of what that is, sir?

9 A. Generally speaking, yes.

10 Q. So this is the form that a patent owner will fill out
11 when there has been technology incorporated into a standard
12 that the patent owner believes is covered by patents.

13 Correct?

14 A. Okay.

15 Q. And what the patent owner is committing to do is to be
16 prepared to grant a license to an unrestricted number of
17 participants on a worldwide non-discriminatory basis and on
18 reasonable terms and conditions. Do you see that, sir?

19 A. Yes, I do.

20 Q. And CommScope has been aware of TQ Delta for at least the
21 last 10 years. Correct?

22 A. My understanding is that the initial discussions occurred
23 in 2013. So that's the extent of my knowledge of how far back
24 it goes.

25 Q. Okay. And CommScope's also been aware of Aware, the

1 company, from before that. Correct?

2 A. I'm not sure about the -- the understanding or
3 the -- again, I apologize, no pun intended, for the awareness
4 of Aware prior to TQ Delta. So I'm not sure what -- what
5 history was there prior to TQ Delta reaching out in 2013.

6 Q. CommScope is a member of the ITU, is it not?

7 A. I do not personally know. I assume we are.

8 Q. Aware -- ARRIS was a member of the ITU, correct, the
9 company that CommScope acquired?

10 A. I do not know.

11 Q. What about 2Wire? Do you know whether they're a member
12 of the ITU?

13 A. I do not know.

14 Q. Again, unfortunately, you weren't here for opening
15 statements, but your lawyer put up a slide that showed 2Wire
16 and Aware at a table at the ITU. Would you take my word for
17 that?

18 A. I'll take your word for it, yes.

19 Q. Okay. And so is it reasonable to assume then that 2Wire
20 was aware of Aware from -- from its interactions at the ITU?

21 A. I would not know the details of what was in that picture
22 and what conclusion could be actually drawn from that.

23 Q. Okay. You weren't here, either, for Mr. Tzannes'
24 testimony, but he testified that Mr. -- that himself, when he
25 would be in the small group meetings teaching, 2Wire or ARRIS

1 or one of the CommScope entities would be in the room with
2 him.

3 Have you read his transcript at all or do you have any
4 basis to agree or disagree with that?

5 A. I have no basis to agree or disagree on that.

6 Q. You didn't come prepared to talk about that issue.

7 A. No, I did not.

8 Q. Okay. He also testified that CommScope would be involved
9 in the larger group meetings. Are you aware of that at all?

10 A. No, I'm not.

11 Q. And are you aware of whether or not if CommScope or ARRIS
12 or 2Wire or Pace, if -- whether they've been combined or
13 whether they are still individual, if they are all in that
14 room when the standard gets adopted, all those companies have
15 to vote to adopt the standard. Is that your understanding of
16 how that actually works?

17 A. I do not understand. I do not have knowledge of the
18 actual inner workings of how the ITU works and -- and those
19 processes.

20 Q. And the ITU, obviously having sat in this courtroom for
21 at least the last two days, has come up a lot, hasn't it?

22 A. Definitely.

23 Q. So it's an important issue in this case. And it's
24 policies, its procedures, how it works, what it means, that's
25 all very important to this case, isn't it?

1 A. Yes, it is.

2 MR. DAVIS: Could I have that Exhibit 68, please,
3 Mr. Diaz, again?

4 Q. (BY MR. DAVIS) And you understand what an applicant is,
5 don't you, sir?

6 A. Yes, I do.

7 Q. An applicant is someone who is applying for something.
8 They want something so they're making a request to receive it.
9 Right?

10 A. Yes.

11 Q. You wouldn't consider CommScope to be an applicant to
12 TQ Delta for a license to its patents, would you?

13 A. I would -- no, I don't believe so.

14 Q. And they're certainly not willing to take a licence here
15 in this courtroom this week, are they?

16 A. I don't believe so.

17 Q. And beginning in 2013 up until 2021, they weren't willing
18 to take a license at all, were they?

19 A. I think we did make an offer to acquire the utilization
20 for the license from TQ Delta, so an offer was made. So by
21 virtue of that, I would say, yeah, there was interest in
22 trying to establish a license agreement with TQ Delta.

23 Q. And that offer that was made--we talked about that I
24 believe on Monday when Ms. Divine was testifying--you got to
25 see that offer. Correct?

1 A. Correct.

2 Q. And do you recall that that offer was actually not made
3 until 2021?

4 A. I believe that's correct.

5 Q. So from before 2021 when that offer was made all the way
6 back to 2013 when TQ Delta first reached out to CommScope,
7 CommScope was not willing to take a license at all during that
8 time period, were they?

9 A. I believe we were willing to take a license based on a
10 fair and reasonable rate actually having been negotiated.

11 Q. CommScope never actually applied for a license, did it?
12 It never made an offer, did it?

13 A. I don't believe we made an offer prior to that one.

14 Q. And you understand that during that whole time period,
15 from 2013 when TQ Delta first reached out until 2021 when
16 CommScope made its offer, TQ Delta was wanting to make an
17 offer to CommScope. Correct?

18 A. I know an offer was not made from TQ Delta beyond
19 referencing what I believe is called I believe the rate card,
20 so essentially I think the standard rates. So I don't think
21 anything was ever offered beyond that. And I think that was
22 the hope of CommScope was that we'd be able to negotiate
23 something that we felt was fair and reasonable. We didn't
24 consider the rate card to be fair and reasonable.

25 Q. I understand that, sir, but I'm just asking whether or

1 not TQ Delta was willing to enter into a license with
2 CommScope.

3 A. Yes, but at the standard rates or at the rate card.

4 Q. Uh-huh. And TQ Delta was asking CommScope for its sales
5 information during that period of time from 2013 to 2021.
6 Correct?

7 A. That's my understanding.

8 Q. CommScope never provided it.

9 A. That's correct.

10 Q. Okay. And you understand that TQ Delta said that it
11 needed that information in order to be able to make a
12 proposal. You understand that?

13 A. I understand that.

14 Q. Okay. TQ Delta also shared technical information with
15 CommScope, didn't it?

16 A. I don't know what specific technical information was
17 exchanged.

18 Q. Okay. Well, you heard Ms. Divine testify on Monday.
19 Correct?

20 A. Yes, I did.

21 Q. And we looked at some of those documents, and she
22 testified that they shared technical -- detailed technical
23 information about the patents, how they worked with the
24 standards, claim charts. In fact, some of those claim charts
25 were so big that they had to provide a link to download them.

1 A. Okay.

2 Q. Do you remember that testimony, sir?

3 A. Yes, I do.

4 Q. Okay. CommScope never provided any information like that
5 to TQ Delta, did they?

6 A. I do not know what specific detail information we
7 provided back over to TQ Delta. Again, I'd have to defer to
8 my legal team on what specifically was exchanged.

9 Q. So you don't know one way or another. Is that your
10 testimony?

11 A. I do not.

12 Q. Okay. And what we know is that the only thing -- well,
13 we know that they didn't produce their sales data. Correct?

14 A. Correct.

15 Q. And we know that they didn't -- you don't know whether
16 they offered any technical information to say -- one way or
17 another to explain to TQ Delta that, Hey, you know, your
18 patents don't really cover a standard, or our products don't
19 work the way you think they do. That information was never
20 provided. Correct?

21 A. I'm not aware of what information was provided from
22 CommScope over to TQ Delta.

23 Q. It would be reasonable, don't you think, sir, if there's
24 a disagreement about an issue, to exchange information in
25 order to try to work the issue out?

1 A. Well, again, my understanding of the situation was that
2 we were asking TQ Delta -- we were expecting to enter into
3 negotiation on fair and reasonable terms, and that never --
4 that process never got underway, so we never got beyond the
5 initial offer of, again, what was on the rate card.

6 Q. Well, you got the offer from TQ Delta that was TQ Delta's
7 standard rates. Correct?

8 A. That's my understanding.

9 Q. And then over the course of the next -- that offer was
10 first made to CommScope in 2017. Isn't that right?

11 A. Referring to rate card, my understanding is that goes
12 back actually originally to the original offer I believe in
13 2013.

14 Q. What are you referring to when you say 'rate card', sir?

15 A. Standard rate is based on my discussions with the legal
16 team is what we've been directed to by TQ Delta from the
17 initial discussions.

18 Q. Is that the range of rates that we talked about with
19 Ms. Divine?

20 A. I believe it was just the different rates depending on
21 the actual patent itself.

22 Q. So the 90 cents for VDSL2? That rate?

23 A. I believe that's the rate, yes.

24 Q. All right. I can represent to you--and we talked about
25 this with Ms. Divine--that was communicated to CommScope in

1 2017.

2 A. Okay.

3 Q. Okay?

4 And from 2017 until 2021, roughly four years, there was
5 no response from CommScope. 2021 was the first time that
6 CommScope made any kind of a counteroffer or any kind of a
7 proposal to TQ Delta. Isn't that correct, sir?

8 A. That's my understanding. That was the initial offer that
9 we made back over to TQ Delta.

10 Q. And that's eight years after the first correspondence in
11 2013. Correct?

12 A. Sounds right, yes.

13 MR. DAVIS: Could I have Exhibit 81, please,
14 Mr. Diaz?

15 Q. (BY MR. DAVIS) You've seen this document in court this
16 week. Correct, Mr. Wauters?

17 A. This cover page isn't familiar to me.

18 Q. You haven't seen this document at all this week or --

19 A. I don't recall. We've seen a lot of documents this week.
20 I apologize.

21 Q. That's all right. I understand.

22 You're aware that this is a presentation that Aware made
23 to TQ Delta related to the sale of its patent portfolio.

24 A. Okay.

25 Q. Okay. And this document --

1 MR. DAVIS: If we could have page 5 of this
2 document, Mr. Diaz.

3 Q. (BY MR. DAVIS) There has been some discussion about
4 dates related to patents in this case, and this document was
5 prepared by Aware and it was provided to TQ Delta. Would you
6 agree with me on that?

7 A. I'll take your word for that.

8 Q. Okay. And the date that Aware provided to TQ Delta as
9 part of the acquisition was the date of -- was something
10 called a priority date. Do you see that?

11 A. I see that.

12 Q. Okay. Because a priority date is a very important date
13 in the life of a patent, isn't it? Is that right, sir?

14 A. I'm not aware of what the priority date represents.

15 Q. Okay. Well, you're not aware at all -- as to what it
16 means at all in terms of how patents work?

17 A. General understanding of how patents work. I do not
18 specifically understand what the priority date is.

19 Q. Okay. All right. Well, the priority date is the date
20 that the invention is first disclosed to the Patent Office.
21 Could you at least agree with me on that?

22 A. I'll again take your word on that.

23 Q. Okay. And there are patents that can be filed later that
24 claim priority to the priority date. Are you aware of that,
25 sir?

1 A. I'm not.

2 Q. Okay. And once a patent application is filed claiming
3 priority to an earlier application, it may take years for that
4 patent to actually issue. Are you aware of that?

5 A. I am aware that it does take years for patents to be
6 actually -- to actually be issued.

7 Q. And during that time, the Patent Office is examining the
8 patent. Correct?

9 A. It's my understanding, yes.

10 Q. Okay. And so if a patent issues much later, that doesn't
11 really say anything about when it was invented, does it?

12 A. That's my understanding.

13 Q. Okay. And really the -- given all of that, would you not
14 agree with me that the most important date in terms of a
15 patent is going to be the date that the patent -- the priority
16 date of the patent?

17 A. I don't know if it's the most important date. I would
18 imagine it's a very important date. I don't know if it is the
19 most important date.

20 Q. Okay.

21 MR. DAVIS: Could we have slide 10, please,
22 Mr. Diaz? Thank you.

23 Q. (BY MR. DAVIS) On this slide, Mr. Wauters, do you
24 recognize what a VDSL DSLAM is?

25 A. Yes, I do recognize that.

1 Q. Now, that's the central office equipment that sits at an
2 AT&T office. Correct?

3 A. Could be in a central office or it could also be in a
4 cabinet on the side of the street somewhere.

5 Q. It could be in a cabinet, in a box. Correct?

6 A. Correct.

7 Q. And it serves a neighborhood?

8 A. Yes, sir.

9 Q. Okay. And there is fiber going to the box. Correct?

10 A. That's correct.

11 Q. And then from the CO to all the residences and homes and
12 consumers in the neighborhood, you have telephone wires. Is
13 that right?

14 A. Correct. From the central office or, again, from that
15 street-side cabinet inside a neighborhood you would have a
16 twisted pair of wires going into the individual houses.
17 Correct.

18 Q. And so even though there is -- there may be fiber going
19 to the CO, whether that's in a central office or in a cabinet
20 in a neighborhood, from there to the residence is telephone
21 wires. Correct?

22 A. That's correct.

23 Q. And those telephone wires require DSL.

24 A. That's correct. To require DSL to provide internet
25 service. Correct.

1 Q. And the DSL modems that CommScope sells sit in the
2 houses. Is that correct?

3 A. That is correct.

4 Q. And that DSLAM, that CO device, can serve multiple
5 residences within the neighborhood.

6 A. Yes.

7 Q. Right?

8 And as new residences move in -- residents move in, you
9 don't necessarily have to sell or install another DSLAM, do
10 you?

11 A. No.

12 Q. Those things are -- the CO devices are scalable.
13 Correct?

14 A. They are, but typically the DSLAMs are sized at a certain
15 point, and sometimes you might have to add an additional
16 chassis if you've reached a certain level of subscription rate
17 within that area where they might actually go beyond that
18 first -- I'll call it the first DSLAM; they might have to add
19 an additional DSLAM to increase the actual capacity.

20 Q. And that would be sliding a new board in?

21 A. It could be adding more cards. It could be adding an
22 additional shelf. It would just really depend on what was put
23 in there on day one.

24 Q. So there is a limit to each CO device, but it is
25 scalable. Isn't that right?

1 A. Sure.

2 Q. And so for each individual resident that moves into a
3 neighborhood, they have to have a new CPE device. Correct?

4 A. That's correct. Unless they -- I believe if -- I believe
5 AT&T actually had a service where you could actually move --
6 like if you are within an area, you could actually, like, say,
7 move from one apartment to the next; you could actually take
8 your CPE with you. So you wouldn't necessarily in every
9 instance have to get a new CPE.

10 Q. And that's if you're an existing subscriber. Correct?

11 A. That's correct.

12 Q. If you are a new subscriber moving into a neighborhood
13 and AT&T sends you a new CPE device, a new modem, that
14 connects into the DSLAM. Correct?

15 A. Correct. And that CPE they send you could be either a
16 brand new unit or it could be a refurbished unit, and --
17 because a lot of times when subscribers cancel their service,
18 their old CPE would go back to AT&T, AT&T would refurbish it,
19 and then send it back out for the next subscription.

20 Q. Okay. And you would agree with me --

21 MR. DAVIS: Could we have the next slide, please,
22 Mr. Diaz, page 11?

23 Q. (BY MR. DAVIS) -- in 2013, when Aware made this
24 presentation, that the number of DSL subscribers had been
25 steadily increasing from 2009 to 2015. Correct?

1 A. That's what this chart is showing.

2 Q. Uh-huh.

3 MR. DAVIS: And can you blow up down here at the
4 bottom, Mr. Diaz, where it says 'source'?

5 Q. (BY MR. DAVIS) It's very grainy, but that says
6 Infonetics Research. Have you heard of Infonetics?

7 A. I have.

8 Q. Infonetics is a research group. Correct?

9 A. I believe so.

10 Q. Thank you.

11 MR. DAVIS: Can we come back out, please, Mr. Diaz?

12 Q. (BY MR. DAVIS) And in 2013, DSL was 64.8 percent of
13 global broadband access market. Isn't that right?

14 In 2010.

15 A. So you're saying in -- okay. 2010?

16 Q. Let me start over with that question.

17 A. Okay.

18 Q. In 2010 the DSL was 64.8 percent of global broadband
19 access market. Correct?

20 A. According to this slide and according to this research,
21 apparently that's what it's claiming.

22 Q. And VDSL2 was the fastest growing DSL market. Correct?

23 A. Again, according to this slide, that's what it says.

24 Q. Okay.

25 MR. DAVIS: Could I have the next slide, please,

1 Mr. Diaz?

2 Q. (BY MR. DAVIS) And this slide is titled "DSL Service
3 Provider Subscribers." Correct?

4 A. Correct.

5 Q. And AT&T was quoted as saying, "U-verse is now an
6 annualized revenue stream of \$6.9 billion that grew at a rate
7 of 57 percent." Correct?

8 A. Yes.

9 MR. DAVIS: Mr. Diaz, can I have Defendants' opening
10 statements, please? And if I could have I believe it's slide
11 5. I'm sorry. It's the slide where there's the graph and the
12 red arrow going down. Yes. Thank you very much. Slide 12.

13 Q. (BY MR. DAVIS) You weren't here for opening statements.
14 Correct, Mr. Wauters?

15 A. Correct.

16 Q. Well, counsel for CommScope showed this slide to the jury
17 and said that essentially DSL was going down between 2006 and
18 2015. And that seems to be what he's communicating on this
19 slide. Correct?

20 A. That's what it appears to communicate, yes.

21 Q. And he's got this big red arrow going down to the right.
22 Now, that slide, this graphic comes from the document
23 we've just been talking about. Would you take my word for
24 that?

25 A. Yes.

1 Q. Okay. And what counsel for CommScope did was cut just a
2 portion of that document and put it on a slide and told the
3 jury DSL market is going down.

4 MR. DAVIS: Can we go back to Exhibit 81, please,
5 Mr. Diaz? And if I could have slide 16 again. I'm sorry.
6 Slide 15.

7 Q. (BY MR. DAVIS) This is the graphic that was with the
8 image that was cut out. It says at the top here "CO Port
9 Revenues." Do you see that, sir?

10 A. Yes.

11 Q. And so when Mr. Dacus told the jury that DSL revenues
12 were declining dramatically with a big red arrow, he was using
13 a graphic for CO port revenues. Do you see that?

14 A. I do see that.

15 Q. Okay. Now, CO is not CPE. Correct?

16 A. Yes.

17 Q. Okay.

18 MR. DAVIS: Could I have the next slide, please?

19 Q. (BY MR. DAVIS) CPE revenues show -- tell a different
20 story, don't they?

21 A. According to this chart, yes.

22 Q. CPE revenues, which is the DSL modems that CommScope
23 sells, from 2006 to 2015 peaked around 2015 and started to
24 taper off, but nowhere the dramatic decline as the CO
25 revenues. Correct?

1 A. Correct.

2 Q. And what we also see in this slide is that the darker
3 shading is ADSL. Correct?

4 A. Correct.

5 Q. And that would be the older version of DSL. Correct?

6 A. Correct.

7 Q. And the newer version of DSL is called VDSL. Right?

8 A. Yes.

9 Q. And as we see -- we march along the graph here, we see
10 that the percentage of VDSL subscribers is going up compared
11 to the prior year. Correct?

12 A. Yeah; slightly.

13 Q. Uh-huh. But it is increasing. Correct?

14 A. It is, yes.

15 Q. And the primary VDSL CPE suppliers in 2013, one of them
16 was 2Wire. Correct?

17 A. That's my understanding, yes.

18 Q. And one of them was Pace?

19 A. Yes.

20 Q. Okay. Both companies now owned by CommScope. Correct?

21 A. Yes.

22 MR. DAVIS: If I could have Exhibit 135-A, please,
23 Mr. Diaz.

24 Q. (BY MR. DAVIS) Now, this is the offer that CommScope
25 made to TQ Delta in 2021. Correct?

1 A. Yes, I believe so.

2 Q. And in its offer, CommScope proposes, potentially, to pay
3 certain rates for the various standards. Correct?

4 A. Correct.

5 Q. Now, you've heard throughout this trial ADSL is not an
6 issue in this case, but the other three, VDSL, G.INP, and
7 G.bond are. And CommScope also proposes that there will be
8 this graduated volume discount off of these rates. Correct?

9 A. Correct.

10 Q. And by this time in 2021 when CommScope made this offer
11 to TQ Delta, TQ Delta had entered into four different
12 licenses. Are you aware of that?

13 A. I am.

14 Q. Okay. And those licenses had each been sent to CommScope
15 for their review. Correct?

16 A. The four -- can you please repeat that?

17 Q. Sure. The licenses, the Zhone license, the ZyXEL
18 license, the Siemens license, the Fujitsu license, those
19 licenses has been sent to CommScope for their review in the
20 settlement -- in the licensing negotiations. Correct?

21 A. I'm not familiar if those licenses were sent over to us
22 or not.

23 Q. Okay.

24 MR. DAVIS: Could I have Exhibit 135-D, please,
25 Mr. Diaz? I'm sorry. 135-D. There we go. Could I have the

1 first paragraph, please?

2 Q. (BY MR. DAVIS) This is a letter from TQ Delta to
3 CommScope. Correct?

4 A. Correct.

5 Q. And it's dated August 2021. And it says, "The volume
6 discounts you propose are not consistent with TQ Delta's
7 licenses" doesn't it?

8 A. I see that.

9 Q. It goes on to say, "I'm particularly puzzled by your
10 statement given that you are aware of the details of those
11 agreements." Correct?

12 A. I see that.

13 Q. So doesn't it suggest that CommScope has received those
14 licenses?

15 A. That's what it suggests.

16 Q. Okay. And it says that the licenses that TQ Delta has
17 offered to CommScope are consistent with TQ Delta's other
18 licenses. Correct?

19 A. That's what it says here, yes.

20 Q. Okay. And the rates that TQ Delta offered CommScope are
21 90 cents for VDSL. Correct? Do you know, sir?

22 A. I believe that's what you-all -- that TQ Delta offered.

23 Q. Okay.

24 A. Yeah.

25 MR. DAVIS: And if I could have Exhibit 135-B,

1 please, Mr. Diaz? And if I could have page 3 of 6. And the
2 top four items there. Thank you.

3 Q. (BY MR. DAVIS) If designated to operate and/or capable
4 of operating in accordance with VDSL2, it's 90 cents per unit.
5 Correct?

6 A. I see that.

7 Q. 25 cents per unit for G.INP. Do you see that?

8 A. Yes.

9 Q. Okay. And 70 cents per unit if capable of operating with
10 G.bond. Do you see that?

11 A. Yes.

12 Q. And this is Exhibit 135-B, which is a licensing proposal
13 TQ Delta sent to CommScope in 2017. Are you aware of that,
14 sir?

15 A. Yes.

16 Q. Okay. I'm sorry. This was in 2021. Are you aware of
17 that, sir?

18 A. Yes.

19 Q. Okay. And yet CommScope came back and made a proposal
20 that suggested significant discounts off of these rates.
21 Correct?

22 A. Correct.

23 MR. DAVIS: Could I have, please, back to 135-D?
24 And if I could have page 1353, please, Mr. Diaz.

25 Q. (BY MR. DAVIS) And do you see here, sir, this is an

1 email from Mr. Jim Shead at CommScope?

2 A. Yes.

3 Q. And we heard his deposition played just a little earlier
4 this afternoon?

5 A. Yes.

6 Q. And it says, "Hi, Bruce. Thanks for following up." And
7 they're talking about this proposal we just looked at. And
8 Mr. Shead is saying, We believe the structure is accommodating
9 for prior licenses.

10 Do you have any information about why he believed that
11 structure is accommodating for the prior licenses?

12 A. I do not have that detail.

13 Q. Okay. It certainly isn't accommodating for the Fujitsu
14 license, is it?

15 A. I'm not -- I do not know.

16 Q. Well, the Fujitsu license didn't have the same kind of
17 discounts that CommScope was proposing, did it?

18 A. I don't know the details of the Fujitsu license
19 agreement.

20 Q. Okay. In fact, the Fujitsu license had no discounts.
21 Are you aware of that, sir?

22 A. I'm not.

23 Q. Okay. And as Ms. Divine testified to, the only licensees
24 for DSL equipment that had ever received a discount were Zhone
25 and ZyXEL, and they received discounts of 25 percent.

1 Correct?

2 A. I believe that was what was reviewed yesterday, yes.

3 Q. Okay.

4 A. But I believe there was also additional adjustments on
5 their additional discounts as well is what I think our legal
6 team walked through yesterday.

7 Q. Yeah. And those adjustments, though, those were not
8 discounts, were they? Those were pre-payments for future
9 sales. Correct?

10 A. I believe we just contended that they were discounts
11 based on the arguments that I think the -- or, again, our
12 legal team provided yesterday.

13 Q. Okay. But you understand TQ Delta's position in this
14 case is that those are pre-payments for future sales.
15 Correct?

16 A. I understand TQ Delta disputed that those are discounts
17 or not.

18 Q. Right. And they were also an adjustment for rest of the
19 world for countries where TQ Delta didn't have any patents.
20 You understand that. Right?

21 A. Again, I understand that's the position of TQ Delta, yes.

22 Q. All right. Thank you very much.

23 MR. DAVIS: Your Honor, at this time I pass the
24 witness.

25 THE COURT: All right. Ladies and gentlemen, before

1 we proceed with cross examination by the Defendants, we're
2 going to take a short recess. This will probably be the last
3 recess of the day and I'm going to try to keep it short.

4 If you will, simply leave your notebooks closed in your
5 chairs, follow all my instructions, and we'll be back here
6 shortly to continue.

7 The jury's excused for recess.

8 (Whereupon, the jury left the courtroom.)

9 THE COURT: The Court stands in recess.

10 (Brief recess.)

11 THE COURT: Be seated, please.

12 Mr. Barton, are you prepared to proceed with cross
13 examination of this witness?

14 MR. BARTON: I am, Your Honor.

15 THE COURT: All right. Let's bring in the jury,
16 please.

17 (Whereupon, the jury entered the courtroom.)

18 THE COURT: Welcome back, ladies and gentlemen.
19 Please have a seat. We will proceed with cross examination of
20 the witness by the Defendants.

21 Mr. Barton, you may proceed.

22 MR. DAVIS: Excuse me, Your Honor. Is there a
23 witness binder?

24 MR. BARTON: There is not.

25 MR. DAVIS: Okay. Thank you.

1 MR. BARTON: May I proceed, Your Honor?

2 THE COURT: You may proceed.

3 CROSS EXAMINATION

4 BY MR. BARTON:

5 Q. Good afternoon, Mr. Wauters.

6 A. Good afternoon.

7 Q. Let's back up and do introductions. Can you state your
8 full name for the record, please?

9 A. Steven Wauters. I go by Steve.

10 Q. Okay. Mr. Wauters, can you tell the jury a little bit
11 about yourself?

12 A. Sure. I was born and raised in San Antonio, Texas. My
13 wife and I are both from there; high school sweethearts. Went
14 off to Texas A&M where I ended up getting a Bachelor's degree
15 in electrical engineering. And while I was there I started
16 interning in the telecom industry; started working for a
17 company called Alcatel. That was one of the original
18 companies that was building DSL-type products from more of the
19 network electronics side, like in a central office and the
20 remote terminals. So that's how I started my career kind of
21 interning there. And then ultimately went to work for them up
22 in Dallas after I graduated. And then -- and I was originally
23 in kind of like network engineering and then ultimately got
24 into sales, account management.

25 And was lucky enough to move back to San Antonio, because

1 that's where SBC was headquartered, and they ultimately became
2 AT&T. And they were one of our major customers. So moved
3 back to San Antonio around 2000, and had been there ever
4 since.

5 I've since changed companies a few times; went to -- was
6 always more of in the access side of the network, so worked at
7 Alcatel for several years on DSL, and then fiber to the home.
8 I went to go work for a start-up for a few years that's kind
9 of in the space that got bought by Ericsson, and at Ericsson
10 learned a lot about wireless communications, so understood
11 that side of the business.

12 And I've been at CommScope now for right about 12 years.
13 And during that time frame, as well, I've been able to -- or
14 had the opportunity to get to know also the cable company side
15 of the business. So this would be like cable modems and how
16 those types of companies deploy their networks as well. So
17 it's been a fun ride, and, again, glad to still be in San
18 Antonio and working in this segment.

19 Q. I'm going to do my best to slow down, and I think we
20 should -- might -- I might ask you do your best to slow down
21 as well.

22 A. Yes, sir.

23 Q. Is that fair?

24 A. Yes, sir.

25 Q. Okay.

1 THE COURT: Because if you don't I'll ask you to
2 slow down.

3 THE WITNESS: Yes, Your Honor.

4 MR. BARTON: Trying to get ahead of it, Your Honor.

5 Q. (BY MR. BARTON) So what do you do for CommScope?

6 A. So I'm the senior vice president of key account
7 management for North America for CommScope, and what that
8 essentially means is my team is responsible for sales and
9 executive relationships with some of our largest customers
10 within this region. So that would include companies like
11 AT&T, Verizon, T-Mobile. Also work with companies like
12 Comcast and Charter Communications. And so we are responsible
13 for really all of our lines of business selling into those
14 large and strategic customers for CommScope.

15 Q. Are you a lawyer?

16 A. No, I am not.

17 Q. Not a patent litigator?

18 A. I am not.

19 Q. Okay. Can you tell the jury a little bit about
20 CommScope? And let's start by telling them when CommScope
21 was founded.

22 A. Sure. So CommScope was founded in I believe it was 1976,
23 and it started up in Hickory, North Carolina, and that's where
24 we're still headquartered today. And the company was started
25 really with the focus on designing and manufacturing coax

1 cable, which was starting to become high demand as cable
2 companies were starting to put coax all over the country to
3 provide video services into all of our homes. And so that's
4 where we really got our start is really focusing on that.

5 And then over the years we've expanded tremendously into
6 other areas of business. Some of it's been -- organically
7 kind of just developed on our own. Some of it's been through
8 various different acquisitions. And so now today we actually
9 design and manufacture various different products that go into
10 networks for telephone companies, wireless companies, cable
11 companies. We also make equipment that goes into data centers
12 for companies like Amazon and Facebook. So it's a pretty
13 broad portfolio that we now have and that we designed and we
14 continue to manufacture. So we've come a long way since 1976.

15 Q. In view of the breadth of that portfolio of activities,
16 is the company divided into any segments?

17 A. Yes, we are. So we're divided in four, what we call our
18 core segments. And so those four segments -- I'll kind of
19 walk through them, try to take my time here a little bit.

20 But the first one is outdoor wireless. And so that's
21 going to be the equipment that goes up on cell towers. So if
22 you look at a cell tower, you see those big rectangular panels
23 up there. We make the majority of those antennas for North
24 America. So again, T-Mobile, Verizon, AT&T buy a lot of that
25 equipment and kind of the ancillary equipment that goes around

1 those products.

2 Indoor networks. So this is the organization where we
3 actually have WiFi access points and in-building cellular-type
4 solutions to put into buildings, like this courthouse, so we
5 can all have our devices -- obviously not having our devices
6 here in this court, but make our devices work inside of
7 buildings.

8 And then we have our cable and connectivity group. And
9 so that's the team that's focused on fiberoptic cable and
10 actually putting a lot of the infrastructure into place for
11 fiber to the home type of deployments that are really starting
12 to gain momentum, especially here in the U.S.

13 And then the last core segment is what we call our access
14 networks solution group. And so this is the team that's
15 building really more of the network electronics that would go
16 into central offices and these street-side cabinets for the
17 cable companies.

18 So those are the main four segments that we have at
19 CommScope.

20 THE COURT: Let's see if we can break these
21 narrative questions up into smaller segments. Okay.

22 MR. BARTON: Certainly.

23 THE COURT: All right.

24 Q. (BY MR. BARTON) So Mr. Wauters, I'll ask you just to
25 focus on my question and answer that, and then we'll keep

1 going. Okay?

2 A. Yes.

3 Q. All right. So what business segment does CommScope's
4 DSL product line we've been talking about here fall under?

5 A. That actually resides in what we call home networks.

6 Q. Is home networks one of CommScope's core segments that
7 you just described?

8 A. No, it is not.

9 Q. Why not?

10 A. It was determined about two years ago that we would
11 ultimately spin off this -- the home networks part of our
12 business, and part of the reason of that is that the
13 profitability of those products within home networks, i.e.,
14 CPE, really did not kind of stack up very well compared to the
15 profitability of the rest of the company.

16 Q. Does CommScope have a research and development budget?

17 A. We do.

18 Q. About how big is it per year?

19 A. It's over \$600 million for the last several years each
20 year.

21 Q. And is intellectual property important to CommScope?

22 A. Very much so.

23 Q. Does CommScope have any patents?

24 A. We have over 15,000 patents.

25 Q. And I take it you take intellectual property pretty

1 seriously?

2 A. Very seriously.

3 Q. Okay. Now, let's focus on the CommScope DSL business.
4 And if you could tell the jury, when did CommScope first start
5 selling DSL technology?

6 A. First started selling DSL technology in the early 2000s.

7 Q. And was that CommScope as we know it today selling that
8 activity, or was that other companies?

9 A. It was through the acquisition of other companies we
10 spoke about awhile ago--2Wire, Pace, those types of companies
11 going back to early 2000s.

12 Q. Okay. So speaking of some of those acquisitions, can you
13 explain to the jury why CommScope acquired ARRIS?

14 A. Some of the main reasons we purchased ARRIS, really I'd
15 say there's kind of two main purposes of it. One of them was,
16 again, with our cable customers, CommScope was selling fiber
17 cable, coax cable to these cable customers like Fidelity and
18 Comcast and Charter, so CommScope was selling that type of
19 gear.

20 ARRIS was selling more the network electronics. So we
21 saw a lot of synergy by acquiring ARRIS so that we could
22 actually provide an end-to-end solution over to the cable
23 companies by combining the two organizations. And the same
24 thing kind of went for in-building where CommScope -- we had a
25 big portfolio of kind of in-building cellular solutions, but

1 we didn't have WiFi, and that's what ARRIS had. So again,
2 buying ARRIS allowed us to kind of combine those portfolios
3 and be able to take care of a building all at the same time
4 with all technologies.

5 Q. And just remind us, when did CommScope purchase ARRIS?

6 A. It's been nearly four years; four years next month.

7 Q. And in that four-year period since CommScope acquired
8 ARRIS's DSL business, has the DSL CPE modem business been
9 successful?

10 A. It has not been successful.

11 Q. Why not?

12 A. The sales of those DSL modems has significantly decreased
13 over that time period.

14 Q. What are some of the reasons that CommScope is seeing
15 behind that decrease in sales?

16 A. What we've seen, a lot is subscribers are just really
17 changing the way that they are actually getting their internet
18 connection and their broadband connections into their homes.
19 So what -- there's a couple of different things that have
20 happened.

21 Within the telephone companies--and telephone companies
22 are the typical ones that have deployed DSL over the
23 years--telephone companies are now investing more in bringing
24 fiber to the home to their customers. So we've seen a lot of
25 subscribers inside of telephone companies switch over to

1 fiber. And then we've also seen a lot of DSL subscribers
2 actually move away from the telephone companies and over to
3 the cable companies, because with that coax connection into
4 your home you dynamically get 300, 500 megs, maybe even a gig,
5 a gigabit worth of internet speed, which is really fast,
6 versus on DSL where you're typically going to be capped out at
7 maybe about 40 megabits per second. So for maybe the same
8 price, maybe a little bit more, you can get, I mean, sometimes
9 five, six, 10 times the speed and move over to cable company.
10 So we've seen a lot of decline in DSL because of that.

11 And then last, but not least, there is also satellite
12 offerings. And then there is a wireless offering. So you can
13 actually get home internet from companies like T-Mobile and
14 from Verizon.

15 Q. How have those alternatives that you just discussed
16 impacted the demand that CommScope is seeing for its DSL modem
17 products?

18 A. We've seen the demand come down tremendously.

19 Q. So you saw a slide that Mr. Davis showed you that
20 suggested that the demand for DSL modems has really crashed.
21 Is that accurate?

22 A. It has, yes.

23 Q. Okay. Who is CommScope's largest customer for DSL
24 modems?

25 A. AT&T.

1 MR. BARTON: At this point, Your Honor, I would
2 request that the courtroom be sealed for confidential
3 information.

4 THE COURT: All right. Based on counsel's request
5 and to protect confidential information, I'll order the
6 courtroom sealed. I'll direct that all persons present who
7 are not subject to the protective order that's been entered in
8 this case exit the courtroom and remain outside until it is
9 reopened and unsealed.

10 (Courtroom sealed.)

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1 (Courtroom unsealed.)

2 THE COURT: All right, counsel. We're unsealed.
3 You may proceed.

4 MR. BARTON: Thank you, Your Honor.

5 Q. (BY MR. BARTON) Now, Mr. Wauters, what is the single
6 biggest driver of product costs in CommScope's DSL modems?

7 A. My understanding is the Broadcom DSL chipset.

8 Q. For those chipsets, those DSL chipsets that CommScope
9 purchases from Broadcom, does CommScope have any ability to
10 modify the source code in those Broadcom chips?

11 A. I am not aware of any way to modify that.

12 Q. And why is that?

13 A. My understanding is that the source code that Broadcom
14 loads onto their chips--and again, this is source code that
15 they load on the chip before they ship it to us and other
16 manufactures--that's code that they generate that's, my
17 understanding, is used worldwide across multiple manufacturers
18 of DSL modems and that are used across multiple customers,
19 service providers around the world. So it's not something
20 that they would necessarily want really anybody kind of
21 tweaking or adjusting on a per-product basis or per-modem
22 basis. That's my understanding.

23 Q. Now, earlier, Mr. Wauters, you mentioned CommScope has
24 over 15,000 patents. Did I get that right?

25 A. Yes.

1 Q. Do some of those 15,000-plus patents relate to DSL
2 technology?

3 A. Yes.

4 Q. So whether they're standards essential or not, CommScope
5 has patents covering DSL technology?

6 A. It's my understanding, yes.

7 Q. Okay. Does CommScope recognize that there are other
8 innovators out there in the DSL space?

9 A. Definitely.

10 Q. And is CommScope willing to pay innovators for their
11 technology?

12 A. Absolutely.

13 Q. What types of factors does CommScope consider when
14 evaluating licensing offers?

15 A. I think it really boils down to, I mean, again, fair and
16 reasonable types of royalties. Right? And then also just
17 what's going on with the business and the terms that we get
18 relative to the ability to utilize those licenses. I think
19 all of it, all that -- all those kind of variables come
20 together and really would help -- it would really help define
21 essentially what we're willing to negotiate for individual
22 licenses.

23 Q. Okay. Now, Mr. Wauters, you had some back and forth with
24 Mr. Davis about the licensing offers. Right?

25 A. Yes.

1 Q. From CommScope's perspective, has TQ Delta ever offered
2 CommScope a license that is fair and reasonable?

3 A. I don't believe so.

4 Q. Now, when did TQ Delta first approach CommScope or its
5 predecessor entities?

6 A. I believe it was 2013.

7 Q. And when it made offers to CommScope, are those rates
8 that CommScope offered from TQ Delta's -- sorry. Those rates
9 that TQ Delta offered to CommScope, were those fair and
10 reasonable rates, in CommScope's view?

11 A. I don't believe so.

12 Q. Did CommScope consider the relative decline in the DSL
13 market when evaluating these rates?

14 A. Yes, we did.

15 Q. Why would it evaluate that?

16 A. We have to obviously pay attention to what's going on
17 with our business and our margins, what our opportunities look
18 like going forward. And so, as I mentioned, the business has
19 been declining for several years, and then also the margins
20 have been declining over these years because we've gotten a
21 lot of price pressures from companies like AT&T, we've seen a
22 lot of competition come in, foreign competitors coming in that
23 have also driven down the price of these DSL modems. That's
24 also happened over the course of the last several years. And
25 it definitely didn't help with the pandemic and the supply

1 chain challenges that came out of that for the last three
2 years where our costs went up on anything from chips to the
3 plastic to make the box that forms the basis of the DSL modem,
4 to transportation. All these factors came into play, and so
5 all of that comes into that decision factor.

6 Q. Despite all those factors, did CommScope ever make TQ
7 Delta an offer?

8 A. We did.

9 Q. Did CommScope do that because it believed that it
10 infringed these patents?

11 A. Absolutely not.

12 Q. So why did it make TQ Delta an offer, then?

13 A. Really the -- I mean, our intention was to try to
14 negotiate a deal with them so ultimately we wouldn't have to
15 litigate it; we wouldn't end up in a courtroom like this. So
16 our intention was to try to come up with a compromise with
17 them, and that's why we offered the lump sum plus the other
18 licensing arrangement in that offer.

19 And also, frankly, we want to keep -- stay focused on
20 designing and building products. Right? We don't want our
21 business to be disrupted on events like this. And, I mean,
22 this obviously can take a lot of resources away from our focus
23 areas inside of our company, and so that definitely was the
24 intent of making that offer over to TQ Delta.

25 Q. Were you in court the past couple of days and able to see

1 the licenses that TQ Delta has actually entered into with your
2 competitors?

3 A. Yes, I've seen those.

4 Q. And just to be clear, is ZyXEL a competitor?

5 A. Yes, they are.

6 Q. Are they a direct competitor?

7 A. Yes.

8 Q. Now that you've seen those licenses and what those other
9 companies actually paid, does CommScope still believe that the
10 offers it's received from TQ Delta are not fair, reasonable,
11 and non-discriminatory?

12 A. We do not believe that they are fair and reasonable.

13 Q. Okay. I want to ask you a little bit about products.

14 Are you familiar with CommScope's DSL products?

15 A. Fairly familiar, yes.

16 Q. Okay. And we heard a little bit earlier today something
17 called dynamic D and vectoring. Do you recall that?

18 A. Yes.

19 Q. What is CommScope's understanding as to whether AT&T ever
20 deployed vectoring?

21 A. My understanding is that AT&T trialed vectoring, but they
22 ultimately decided not to upgrade their network to support
23 vectoring.

24 Q. Why not?

25 A. So, first, it would require them to go through all of

1 those DSLAMs we've seen in some of these slides that are
2 either inside of a central office or in a street-side cabinet.
3 There is individual line cards in all of those DSLAMs, and my
4 understanding is that in order to actually enable vectoring
5 inside the DSL network, AT&T would have to go through and swap
6 out all those cards. So it would be a very big investment on
7 their network infrastructure, their network electronics, and
8 they've opted to obviously spend their money on fiber to the
9 home instead. So they've opted to not go down to vectoring
10 path, is my understanding.

11 Q. Okay. The final thing, Mr. Wauters. I believe at the
12 beginning of your adverse direct from Mr. Davis, he asked
13 about the CommScope deployment in Cowboys stadium. Do you
14 recall that?

15 A. Yes.

16 Q. I think he said something like if it's not DSL it's not
17 relevant. Do you recall that?

18 A. That's correct.

19 Q. Okay. So I know Mr. Davis made it clear you weren't here
20 during opening statements, but I want to show you some of
21 TQ Delta's slides they used during opening statements. Is
22 that okay?

23 A. Yes.

24 Q. All right. The first one -- I'll enlarge this a little
25 bit. It says 'DSL modems'. Do you see that product?

1 A. I see that.

2 Q. Are you familiar with that product?

3 A. I am.

4 Q. Okay. Let me show you the next slide.

5 Let's just focus on this one for the time being. You've
6 seen this slide.

7 A. Yes.

8 Q. Okay. Is this a DSL modem?

9 A. It is not a DSL modem.

10 Q. What is it?

11 A. That is a cable modem.

12 Q. Does it have any DSL functionality whatsoever?

13 A. No.

14 MR. BARTON: Pass the witness, Your Honor.

15 THE COURT: Redirect, Mr. Davis?

16 MR. DAVIS: Yes, Your Honor.

17 THE COURT: All right. Let's proceed.

18 MR. DAVIS: Thank you.

19 REDIRECT EXAMINATION

20 BY MR. DAVIS:

21 Q. So as I understand your testimony, Mr. Wauters,
22 CommScope's not really interested in DSL anymore. Is that
23 the message you're trying to send?

24 A. It is a declining revenue for us, there's no doubt.

25 Q. But over the last 20 years DSL's been an important

1 technology in this country, hasn't it been?

2 A. It has.

3 Q. Yeah. And the patents that are at issue in this case
4 were -- have a priority date dating back to the late '90s.
5 Correct?

6 A. Yes.

7 Q. And are you aware, sir, that patents have a life span of
8 roughly 20 years?

9 A. Yes, I am.

10 Q. So CommScope has essentially used DSL technology for the
11 last 20 years and is now done with it. Is that your
12 testimony?

13 A. I wouldn't say that we're done with it.

14 Q. But you spun it out into a different company?

15 A. It's not a different company; it's a segment still within
16 CommScope, and we've announced publicly that our intention is
17 to ultimately spin off our entire CPE division.

18 Q. Does that mean sell it?

19 A. That means sell it; sell it, turn it into its own
20 publicly-traded company. Essentially take it from being
21 inside of CommScope to it being outside of CommScope.

22 Q. And when you acquired ARRIS in 2016, how much did you pay
23 for it?

24 A. I don't recall the actual purchase price off the top of
25 my head of ARRIS. I apologize.

1 Q. Does \$7 billion --

2 A. That sounds right, yes.

3 Q. Sounds right?

4 So for the last -- you paid \$7 billion in 2016 for ARRIS.

5 A. Uh-huh.

6 Q. You've now used DSL technology for 20 years. Some of the
7 patents -- you've heard mentioned about some of the patents in
8 the TQ Delta portfolio have expired, and they'll expire over
9 the next four or five years. Correct?

10 A. Yes.

11 Q. Okay. So as of four or five years ago you were willing
12 to spend \$7 billion to invest in DSL technology. Correct?

13 A. We invested \$7 billion in ARRIS as a whole, and at that
14 time our CEO addressed the fact that part of the ARRIS deal
15 was acquiring their CPE business and acknowledged that it was
16 in decline and was obviously not a favorable part of that
17 acquisition.

18 Q. And yet CommScope has sold 36 million units over the last
19 six years, seven years; something like that?

20 A. I don't know for sure what the number is.

21 Q. Okay. You were asked on direct examination to assume a
22 hypothetical that a DSL modem costs roughly a hundred dollars.
23 Correct?

24 A. Correct.

25 Q. And you understand that for the three standards at issue

1 in this case, TQ Delta's royalty rate, its standard royalty
2 rate comes out to roughly \$1.89?

3 A. That's my understanding.

4 Q. And CommScope could very well have, if it was willing to
5 respect TQ Delta's patent rights, charge AT&T \$1.89 instead of
6 \$100 when it sold 36 million units of DSL modems to it,
7 couldn't it?

8 A. I don't agree with that.

9 Q. Okay. You didn't factor into your pricing the cost of
10 using other people's patents. Correct?

11 A. I don't know what was built into the price estimates.

12 Q. Well, you testified on direct that you factored into it
13 the cost of design, didn't you?

14 A. I don't believe I said that.

15 Q. I think you did. If memory serves me, you said that the
16 profit margins on your products relate -- are factored into
17 the cost of design, manufacture, transport. Those are costs
18 that have to come out of your overall selling price to
19 determine your profits.

20 A. That's correct.

21 Q. And you didn't mention patent licensing, did you?

22 A. Patent licensing would be -- I mean, if it did apply to
23 that product, it obviously would be considered part of the
24 cost.

25 Q. And that's what we're here for the jury to determine is

1 whether you should have factored into your cost the cost of
2 using someone else's patents. Isn't that why we're all here?

3 A. I don't think it's -- I disagree.

4 Q. Okay. You did testify that the single biggest driver is
5 cost. Correct?

6 A. Can you please clarify the question? Single biggest
7 driver for what?

8 Q. For your profit margins.

9 A. Yes, margins are derived directly from cost, yes.

10 Q. Right. And you didn't include patent licensing in that
11 list of things you talked about on --

12 A. I believe I said -- I gave some examples of where costs
13 could be derived from, but I just said that also that
14 ultimately it's the total cost of that product which would
15 be -- which would include items or other factors beyond just
16 the examples that I shared with the jury.

17 Q. And you didn't testify, though, that you actually have
18 any costs built into that for patent licensing. Correct?

19 A. I didn't represent it as one of those -- I didn't offer
20 it up as an example. I'm not sure if any sort of patent
21 licensing is included in that current cost of the DSL modem.

22 Q. Now, you also testified about the Broadcom chip.
23 Correct?

24 A. Yes, I did.

25 Q. And you testified that, Hey, we can't change anything;

1 the chip is the chip when we get it. Right?

2 A. That's my understanding.

3 Q. And you've heard a lot of testimony here this entire week
4 about whether or not -- about the Broadcom chip. Correct?

5 A. Yes.

6 Q. Okay. And, in your view, as I understand your position
7 in this case, Broadcom is where all the infringement's
8 occurring. Correct?

9 A. I did not say that.

10 Q. Okay. You haven't heard your lawyers talk about that in
11 their examinations of witnesses this week?

12 A. I've heard them talk about Broadcom.

13 Q. Okay. And you didn't understand the point that they were
14 trying to make?

15 A. I believe the point they were trying to make is that we
16 get this product from Broadcom; there's not really a way for
17 us to alter it and alter the source code. I don't recall --
18 and I don't recall us specifically stating that the
19 infringement is on Broadcom, though.

20 Q. Oh, okay.

21 A. I don't recall it.

22 Q. Okay. Thank you.

23 Now, you understand from Ms. Divine's testimony that
24 Nokia has also taken a license to TQ Delta's patents.
25 Correct?

1 A. It's my understanding, yes.

2 Q. And Nokia makes the CO equipment; the central office
3 equipment.

4 A. They do make central office equipment, yes.

5 Q. And Nokia's been making central office equipment for many
6 years. Correct?

7 A. Yes, they have. I believe they've also made CPE as well.

8 Q. And Nokia is AT&T's biggest customer, just like you.

9 A. They're one of their -- AT&T is one of Nokia's largest
10 customers, is my understanding.

11 Q. Okay. And yet Nokia agreed to pay not only TQ Delta's
12 royalty rates but a higher rate for a U.S. only license.
13 Correct?

14 A. My understanding is that that was also accompanied with
15 a -- I forget the actual terminology, but there was another
16 agreement signed to the rest of the word.

17 Q. And that was a standsill agreement. Correct?

18 A. That's my understanding, yes.

19 MR. DAVIS: Pass the witness, Your Honor.

20 THE COURT: Additional cross, Mr. Barton.

21 MR. BARTON: No, sir, Your Honor.

22 THE COURT: You may step down, Mr. Wauters, and can
23 return to the Defendants' table as their corporate
24 representative.

25 Ladies and gentlemen, my understanding from counsel is

1 the next witness is about two hours in duration, so we're not
2 going to start a two-hour witness at a quarter till 6:00.
3 We're going to stop for the day at this juncture. We'll pick
4 back up in the morning.

5 I'm going to ask you as you leave the courtroom to go
6 through the jury room, leave those notebooks on the table
7 closed there so they'll be waiting for you securely before you
8 come back in the morning.

9 I'm going to continue to compliment you on your
10 punctuality being here ready to go, and I'm going to ask you
11 continue to do the same thing. Check the weather, check all
12 the other conditions, make arrangements so you can be here so
13 that we can start right at or as close as possible to 8:30.

14 Travel safely to your homes this evening. Have a good
15 evening. And with that -- and, of course, you would expect me
16 to say follow all my instructions including not to discuss the
17 case with anyone.

18 And with that you are excused until tomorrow morning.

19 (Whereupon, the jury left the courtroom.)

20 THE COURT: Be seated, please.

21 All right, counsel. For your information, the Court's
22 records show that the Plaintiff has used 10 hours, 40 minutes,
23 and 53 seconds of designated trial time and has 4 hours and 20
24 minutes remaining. The Defendants have used 6 hours and 14
25 minutes and 4 seconds and have 8 hours and 46 minutes, more or

1 less, remaining.

2 Let me encourage you one more time, in addition to
3 everything I've discussed with you in chambers, to be diligent
4 and professional and effective with your meet and confer
5 efforts overnight. If there are disputes that can't be
6 reasonably resolved, the Court's available as a resource for
7 you, but the Court can't help you if you send me incomplete
8 information that's unsupported.

9 So I'll expect a report to my staff by or before 10:00
10 this evening if there are disputes in there that are
11 surviving. At that point I'll expect a full documented
12 explanation of what they are. I'll also expect you to
13 continue to work until tomorrow morning to try and narrow, if
14 not completely resolve, those matters.

15 If there are matters that despite those continuing
16 efforts are still unresolved, I'll be available to meet with
17 you in the morning, and hopefully I will have had delivered to
18 me information that allows me to be efficient and productive
19 in responding to your disputes.

20 And I will, as I've done once today already, I will take
21 corrective action if those goals are not met. There's no
22 reason they shouldn't be, and I've stressed this to you
23 repeatedly in chambers, I've stressed it on the record once
24 earlier today, and I'm stressing it to you again.

25 I'll also look for the revised and updated joint

1 submission on a proposed charge and verdict form by 3:00
2 tomorrow, as I previously ordered in this case.

3 Is there anything else from either Plaintiff or Defendant
4 before We recess for the evening?

5 Mr. Davis, anything from Plaintiff?

6 MR. DAVIS: Your Honor, the only thing is that may
7 Peter Heller, Dr. Peter Heller be excused?

8 THE COURT: I assume there's no objection.

9 MR. BARTON: No objection.

10 THE COURT: Doctor Heller's excused.

11 MR. DAVIS: Thank you, Your Honor.

12 THE COURT: Anything else from the Plaintiff?

13 MR. DAVIS: No, Your Honor.

14 THE COURT: Anything from the Defendants, Mr.
15 Barton.

16 MR. BARTON: No, Your Honor.

17 THE COURT: We stand in recess until tomorrow.

18 (The proceedings were concluded at 5:45 p.m.)
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1 I HEREBY CERTIFY THAT THE FOREGOING IS A
2 CORRECT TRANSCRIPT FROM THE RECORD OF
3 PROCEEDINGS IN THE ABOVE-ENTITLED MATTER.
4 I FURTHER CERTIFY THAT THE TRANSCRIPT FEES
5 FORMAT COMPLY WITH THOSE PRESCRIBED BY THE
6 COURT AND THE JUDICIAL CONFERENCE OF THE
7 UNITED STATES.

8
9 S/Shawn McRoberts

03/21/2023

10 _____ DATE _____
11 SHAWN McROBERTS, RMR, CRR
12 FEDERAL OFFICIAL COURT REPORTER
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Federal Official Court Reporter